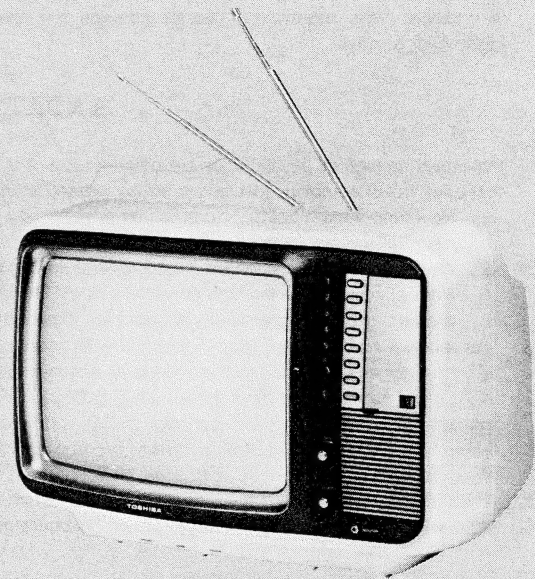


TOSHIBA

COLOR TELEVISION

C-1480F



The TV set is equipped with a 21-pin socket corresponding to the peri television.

SPECIFICATIONS

POWER INPUT RATING:	78 watts (nominal), AC 115 or 230 volts, 50 Hz
AERIAL INPUT IMPEDANCE:	75 ohm unbalanced type for VHF and UHF
RECEIVING CHANNELS:	Any of 11 VHF channels channels 2 to 12 Any of 49 UHF channels channels 21 to 69
INTERMEDIATE FREQUENCIES:	Picture I-F carrier frequency VHF, UHF 32.7 MHz Sound I-F carrier frequency 39.2, 43.85 MHz
COLOUR SUB-CARRIER FREQUENCIES:	B-Y 4, 25000 MHz \pm 2 kHz, R-Y 4, 40625 MHz \pm 2 kHz
CHASSIS CONSTRUCTION:	IC Solid State, Horizontal Chassis
PICTURE TUBE:	370 HZB22 (VY), 33.5 cm-diagonal
SOUND OUTPUT:	0.7 watt (at 10% harmonic distortion) Maximum 1.0 watt
SPEAKER:	Oval, 7 \times 10 cm
CONVERGENCE:	Magnetic
FOCUS:	Electrostatic
CABINET and TYPE:	Wooden, Table type
DIMENSION:	Height 348 mm Width 493 mm Depth 407 mm
WEIGHT (NET):	16.5 kg
CHASSIS NO:	TAS920

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24.5kv at zero beam current (minimum brightness) under a 230v (115v) AC power source. The high voltage must not, under any circumstances, exceed 26.0kv.
Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 15 of this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

1. Potentials as high as 22,000 volts are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
 1. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
 2. Always discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
 3. Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. This receiver has been adjusted in the factory to operate on AC 230v, 50 Hz. But it is possible to change for use with AC 115 volts, 50 Hz. Connect your SET to the voltage of Alternating Current indicated by the AC-LINE INDICATOR located on the rear of the SET. If it is necessary to reset the AC-LINE INDICATOR, be sure to match the voltage indicated on the AC-LINE INDICATOR with that actually applied. NEVER connect to DC supply or any other power or frequency.
3. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
4. When replacing parts of circuit boards, wind the lead wires around terminals before soldering.
5. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm away from circuit board.
6. Keep wires away from high voltage or high temperature components.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by shading on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

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1. SUMMARY

This new colour television model is all Solid-State table type, primarily composed of 1 LSI's, 1 MSI's, 9 IC, 2 PSF, 75 transistors, 92 diodes and a picture tube of 33.5 cm in-line gun slotted mask type.

A plug-in system is adopted for connecting Main PC (Printed Circuit) Board with a Chroma PC module. This will allow easy replacement of module which facilitate rapid and correct inspection and remedy in troubleshooting.

The chassis is provided with nine PC boards and one module (chroma circuit). The In-Line Gun Picture Tube has simplified the dynamic convergence adjustment. That is, although a conventional Delta-Gun System requires twelve-position adjustment, the In-Line Gun System requires only two-position adjustments. This implies that an advanced accuracy of convergence is allowed by the In-Line Gun System.

2. FRONT CONTROLS VIEW

FRONT CONTROLS

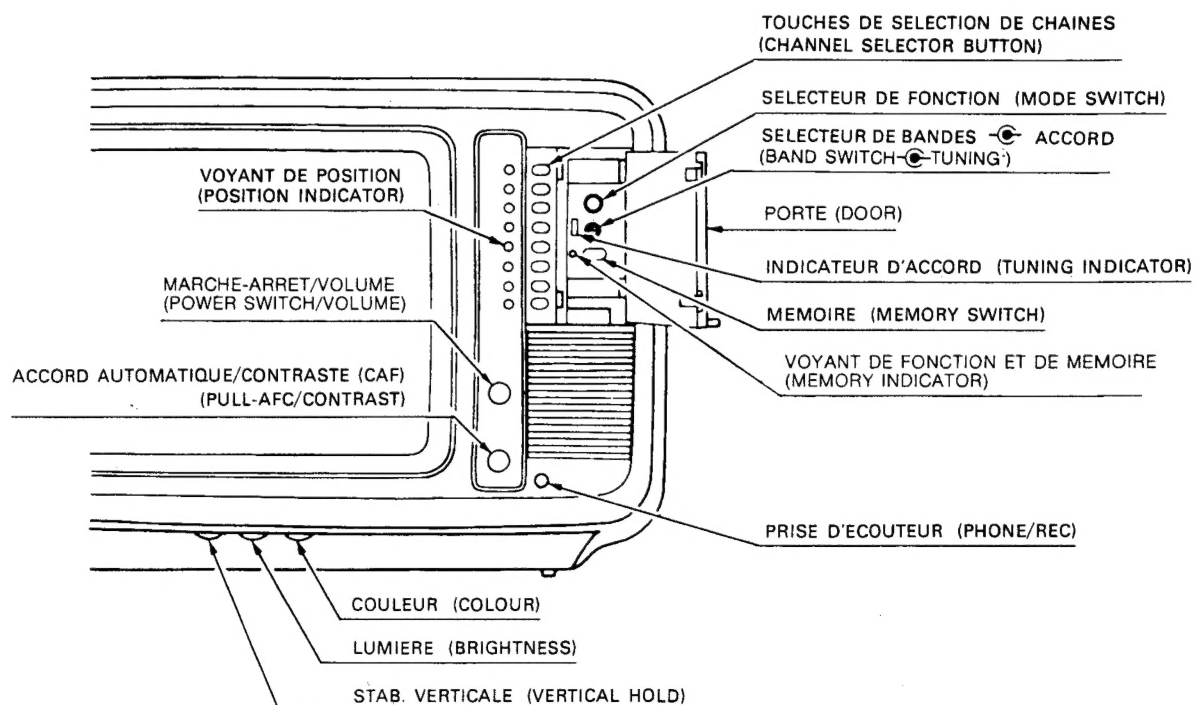


Figure 1.

3. MECHANICAL DISASSEMBLIES

3-1. BACK COVER REMOVAL (See figure 2)

1. Detach the aerial cable or aerial matching trans. from aerial terminal.
2. Remove 5 screws (A) and 2 screws (B) from the back cover.
3. Remove the back cover.

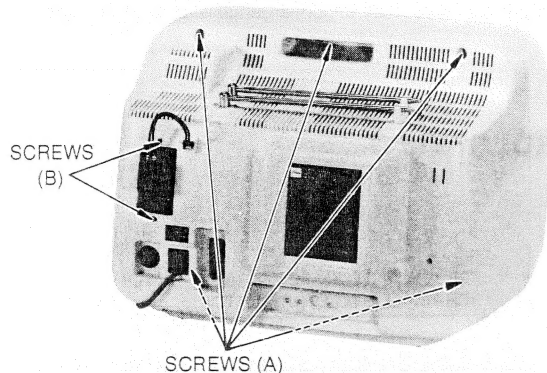


Figure 2.

3-2. DRAWING OUT AND SERVICING THE CHASSIS (See figure 3)

1. Remove a screw (C) securing the chassis from bottom board of cabinet.
2. Unfasten the leads which are fastened at the cabinet or others.
3. Draw out the chassis from cabinet.

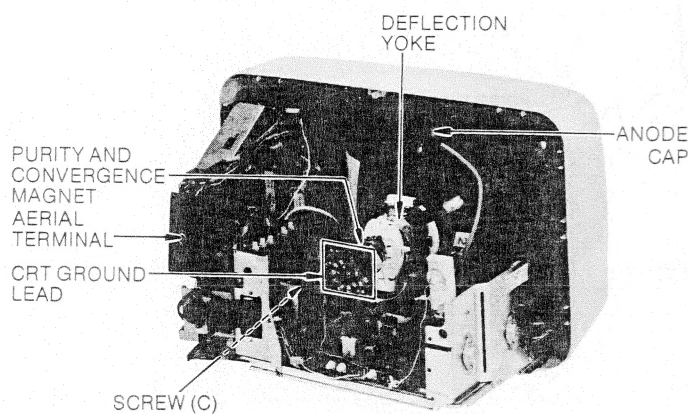


Figure 3. Chassis View

3-3. SELECTOR BLOCK REMOVAL (See figure 4)

1. Unfasten the leads which are fastened at the selector block.
2. Loosen 2 screws (D) which hold the SELECTOR BLOCK to the front control panel.
3. Remove 2 screws (E) which hold the SELECTOR BLOCK to the front control panel.
4. Remove the SELECTOR BLOCK from the front control panel

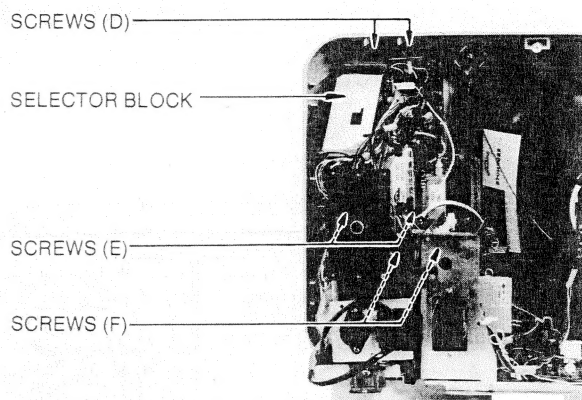


Figure 4.

3-4. FRONT CONTROL VR. BRACKET REMOVAL (See figure 4)

Following the steps under "3-3. SELECTOR BLOCK REMOVAL" proceed as follows.

1. Remove 2 screws (F) which hold the FRONT CONTROL VR. BRACKET to the front control panel.
2. Remove the FRONT CONTROL VR. BRACKET from the front control panel.

3-5. VHF/UHF TUNER REMOVAL (See figure 5)

Following the steps under "3-3 SELECTOR BLOCK REMOVAL" proceed as follows:

1. Disconnect all the leads from the VHF/UHF Tuner. However before doing so, record the original lead connections.
2. Remove 2 screws (G) which hold VHF Tuner to the Tuner bracket.
3. Remove 2 screws (H) which hold UHF Tuner to the Tuner bracket.
4. Remove the VHF/UHF Tuner.

3-6. KEY BOARD REMOVAL (See figure 5)

Following the steps under "3-3 SELECTOR BLOCK REMOVAL" proceed as follows:

1. Disconnect all the leads from the Key Board. However before doing so record the original lead connections.
2. Remove 2 screws (I) which hold Key Board to the tuner bracket.
3. Remove the Key Board.

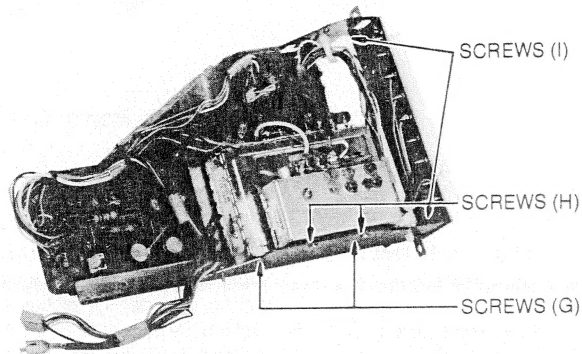


Figure 5.

3-7. CHASSIS REMOVAL (See figure 6)

Following the steps under "3-2. DRAWING OUT AND SERVICING THE CHASSIS", "3-3. SELECTOR BLOCK REMOVAL", "3-4. FRONT CONTROL VR. BRACKET REMOVAL" and "3-6. KEY BOARD REMOVAL" proceed as follows:

1. Detach the CRT ground lead from CRT SOCKET BOARD. (See figure 3)
2. Detach the deflection yoke leads (6P connector) from MAIN BOARD.
3. Detach the picture tube anode cap and CRT SOCKET BOARD from the picture tube.

4. Detach 7P connector of selector unit leads, phono plug of I-F cable, 3P connector of sound out put trans. leads from MAIN BOARD.
5. Detach 4P connector from POWER-2 BOARD.
6. Detach 3P connector from POWER-2 BOARD.
7. Detach 2P connector of Degaussing Coil leads from POWER-2 BOARD.
8. Detach 3P connector from SELECTOR BOARD.
9. Remove the chassis.

Notice: Certainly discharge the high potential of the picture tube anode to the receiver chassis before removing the anode cap.

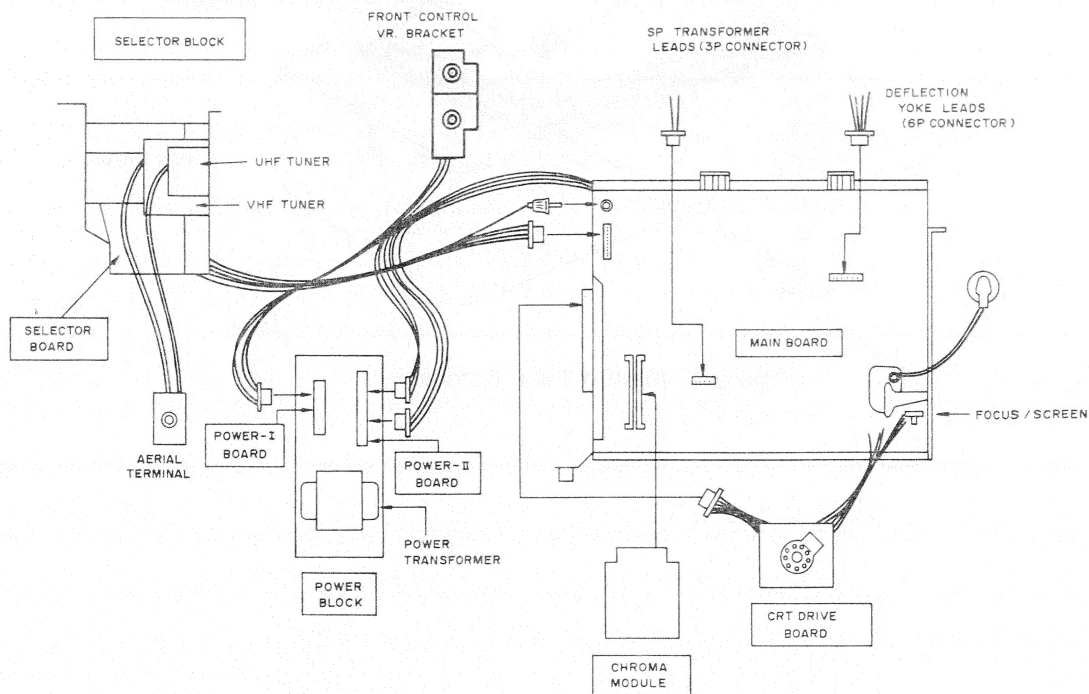


Figure 6.

3-8. POWER CORD REPLACEMENT (See figure 7)

When the power cord replacement is required. Proceed with the following steps.

1. Unsolder the power cord on the terminals of POWER-1 BOARD.
2. Spread the nail with a screw driver (flat) to open the holder cover.
3. Take out the power cord from the power cord holder.
4. To put on a new power cord, reverse the above procedures.

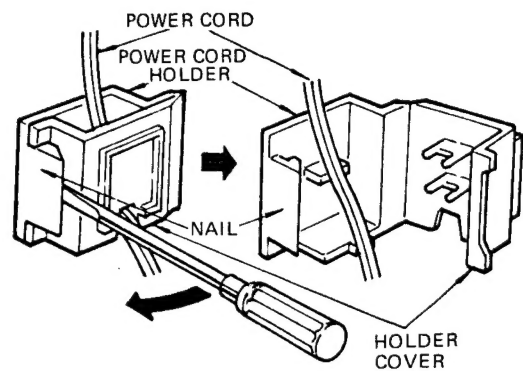


Figure 7. Power Cord Replacement

3-9. PICTURE TUBE REMOVAL (See figure 8)

After following instruction under "3-2. DRAWING OUT AND SERVICING THE CHASSIS" and "3-7. CHASSIS REMOVAL" proceed as follows:

1. Place the cabinet with the front down on a rolled pad or suitable cushion placed near the top edge of the picture tube mask.
2. Remove the purity and convergence assembly from the picture tube neck.
3. Loosen the deflection yoke clamp screw and remove the yoke.

4. After removing four screws securing picture tube to the cabinet, grasping the face plate of the picture tube with both hands, take out the picture tube from the cabinet.
5. Detach the picture tube ground lead which is attached to the picture tube lugs with spring.

Notice: Perfectly discharge the high potential of the picture tube before handling the tube.

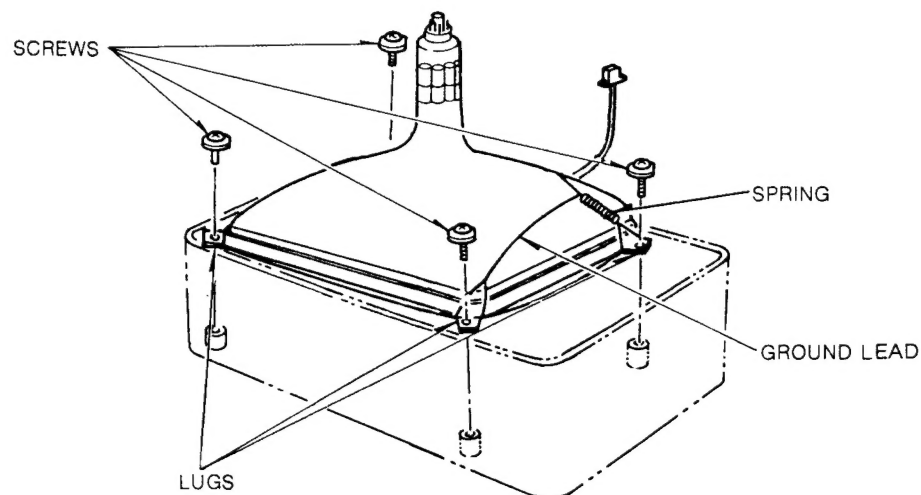


Figure 8. Picture Tube Removal

4. BLOCK DIAGRAM

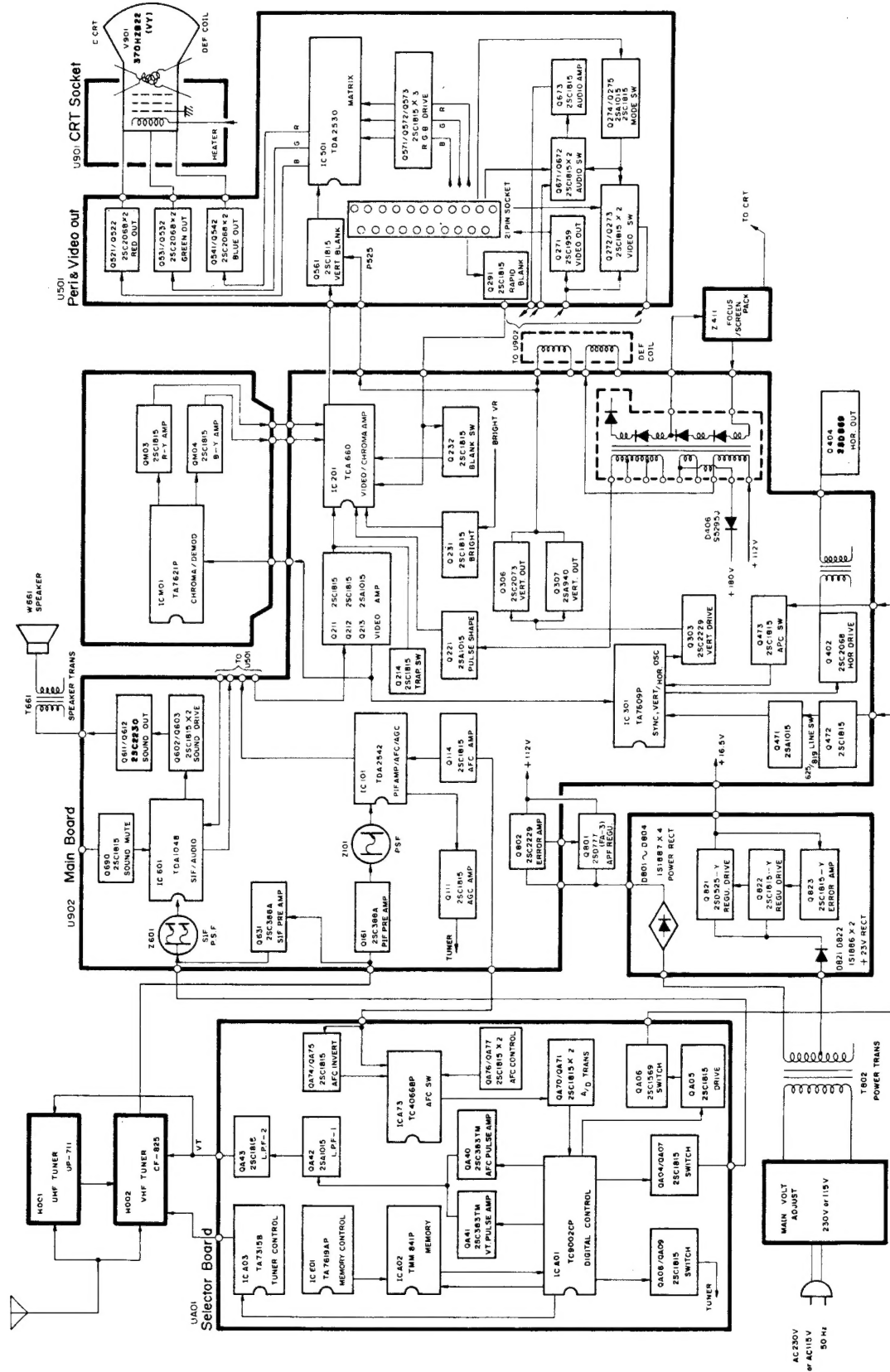


Figure 9. Block Diagram

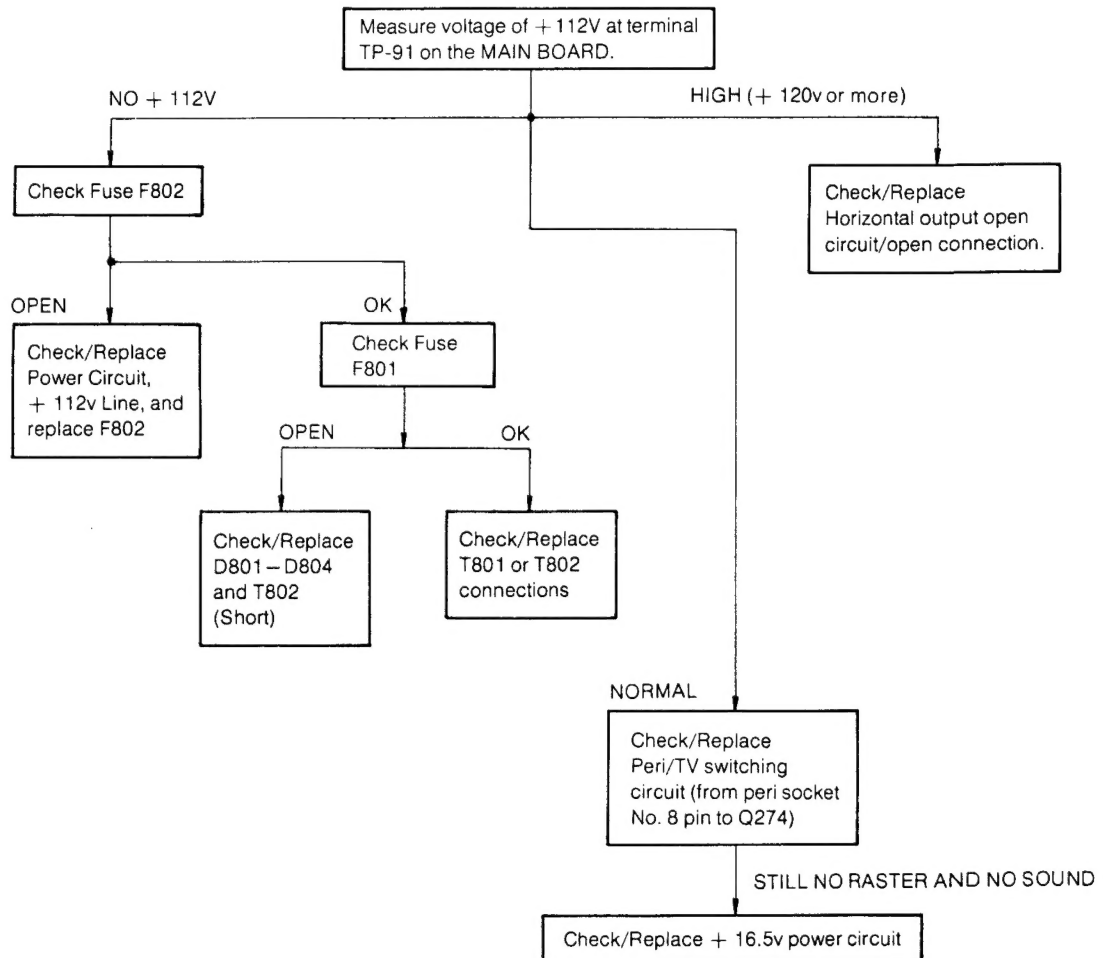
5. TROUBLESHOOTING CHART

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.

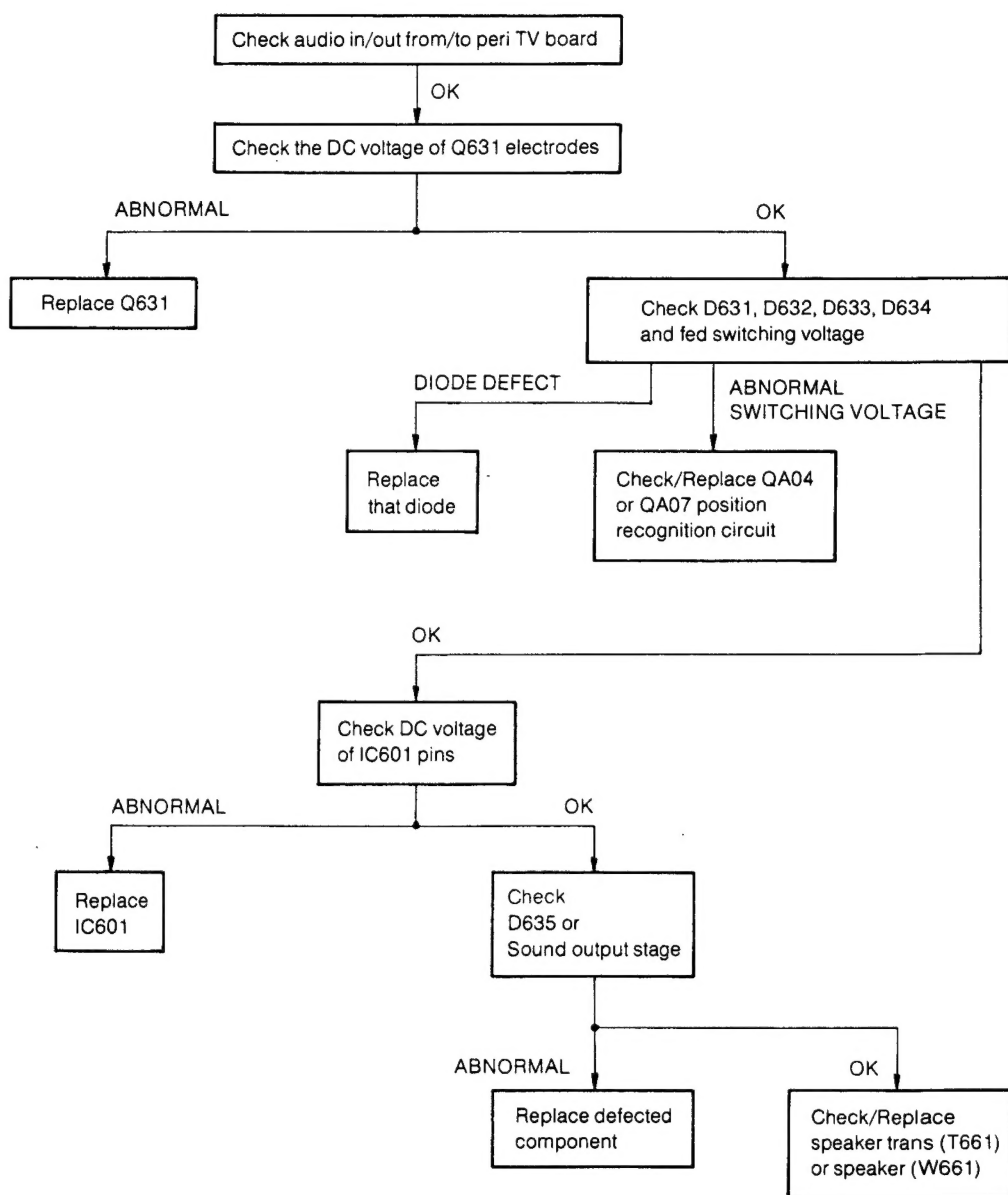
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. — No Raster, No Sound.

Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

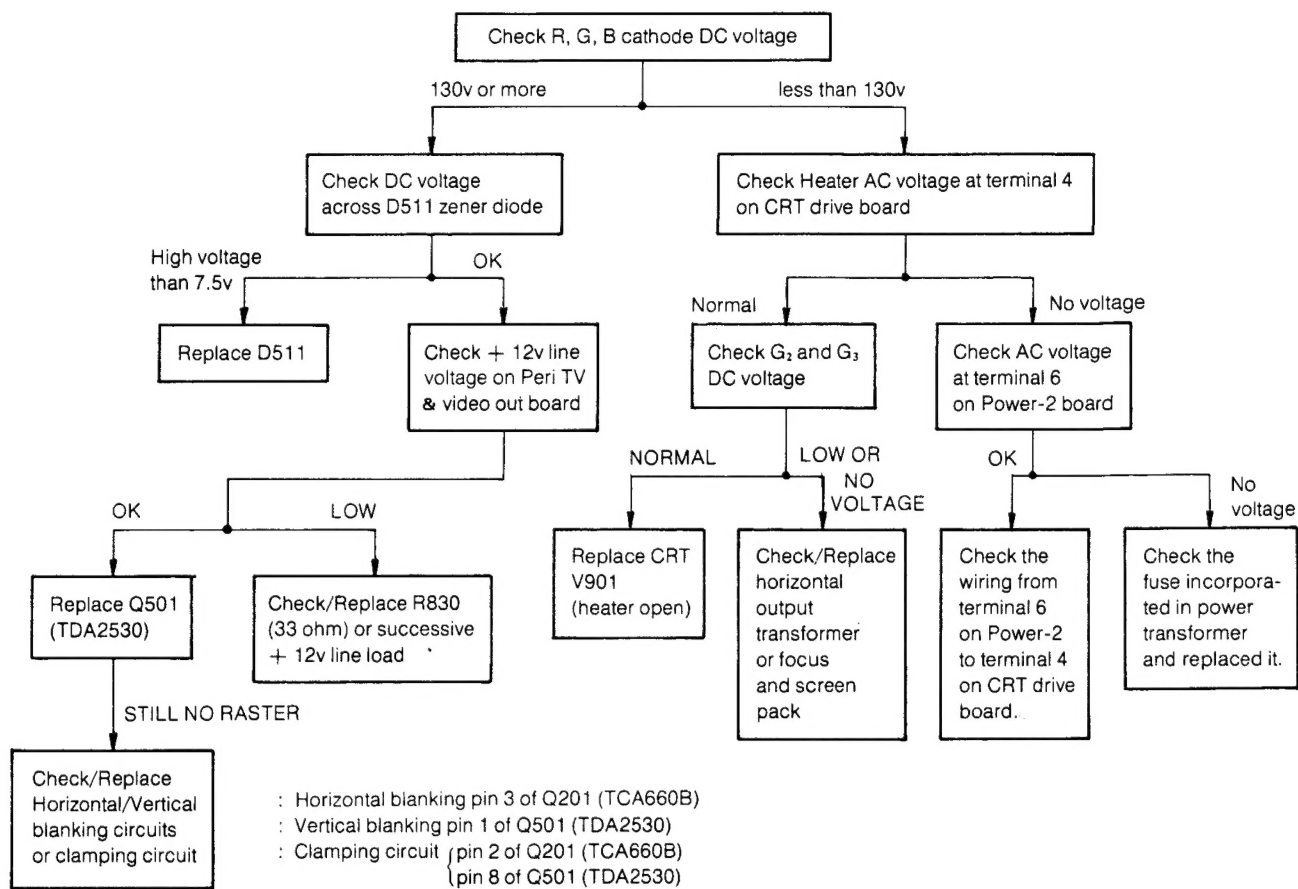
5-1. NO RASTER AND NO SOUND



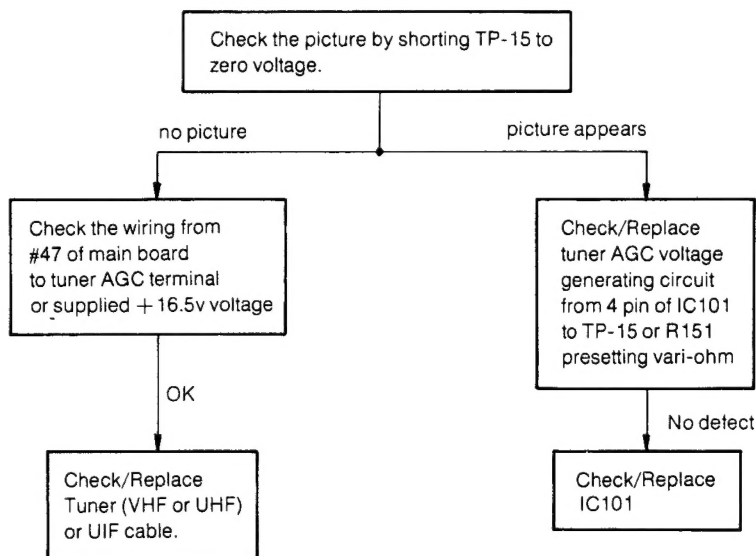
5-2. PICTURE OK AND SOUND WEAK (OR NO SOUND)



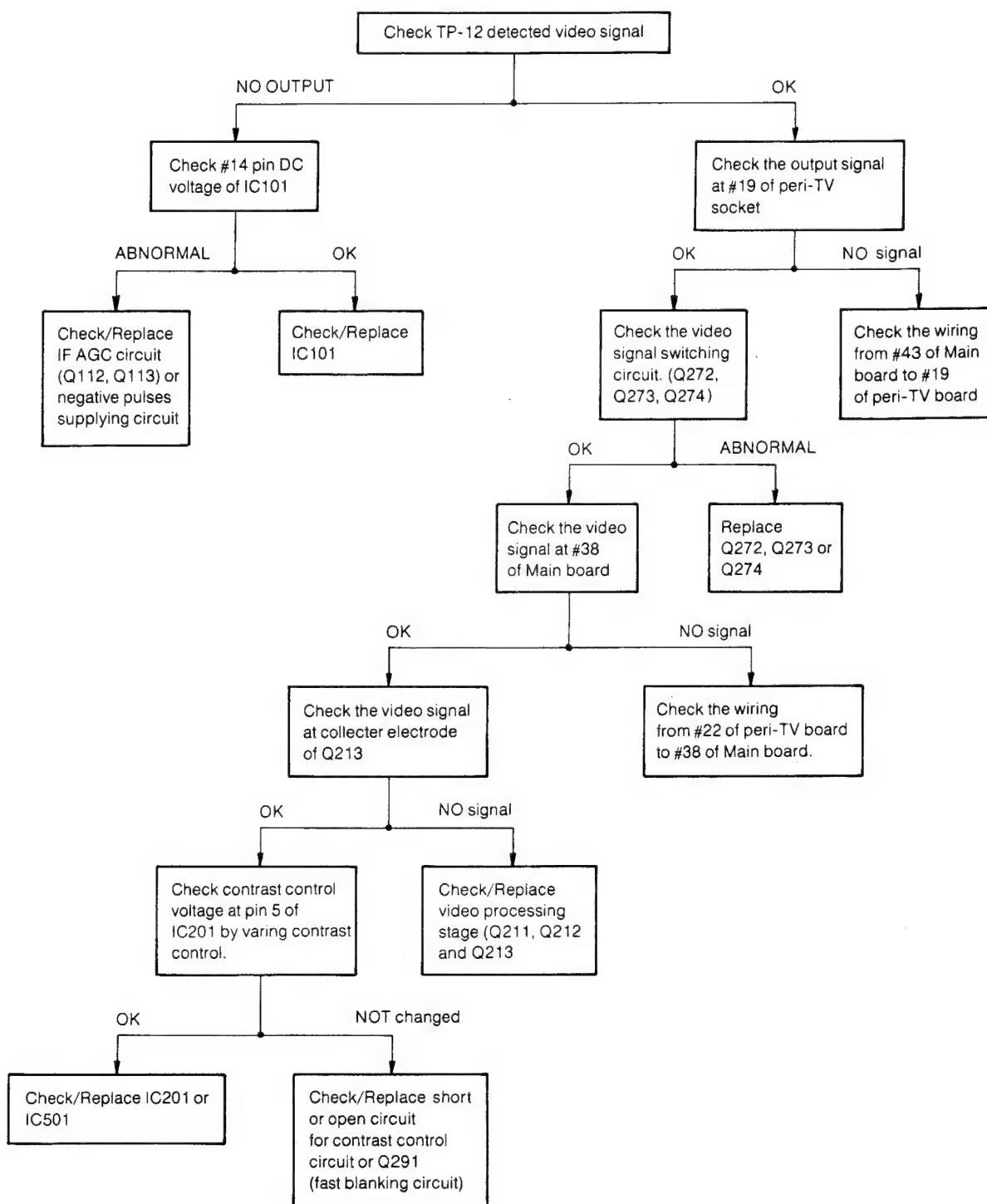
5-3. NO RASTER AND SOUND OK



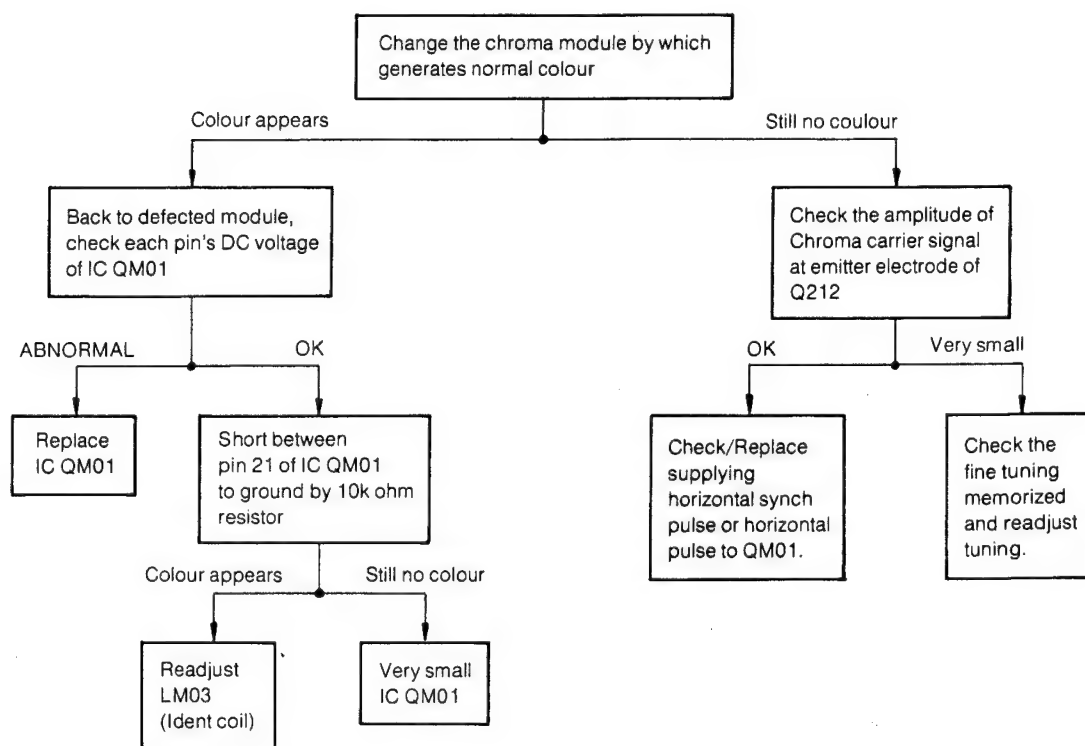
5-4. NO PICTURE (RASTER REMAINS) AND NO SOUND



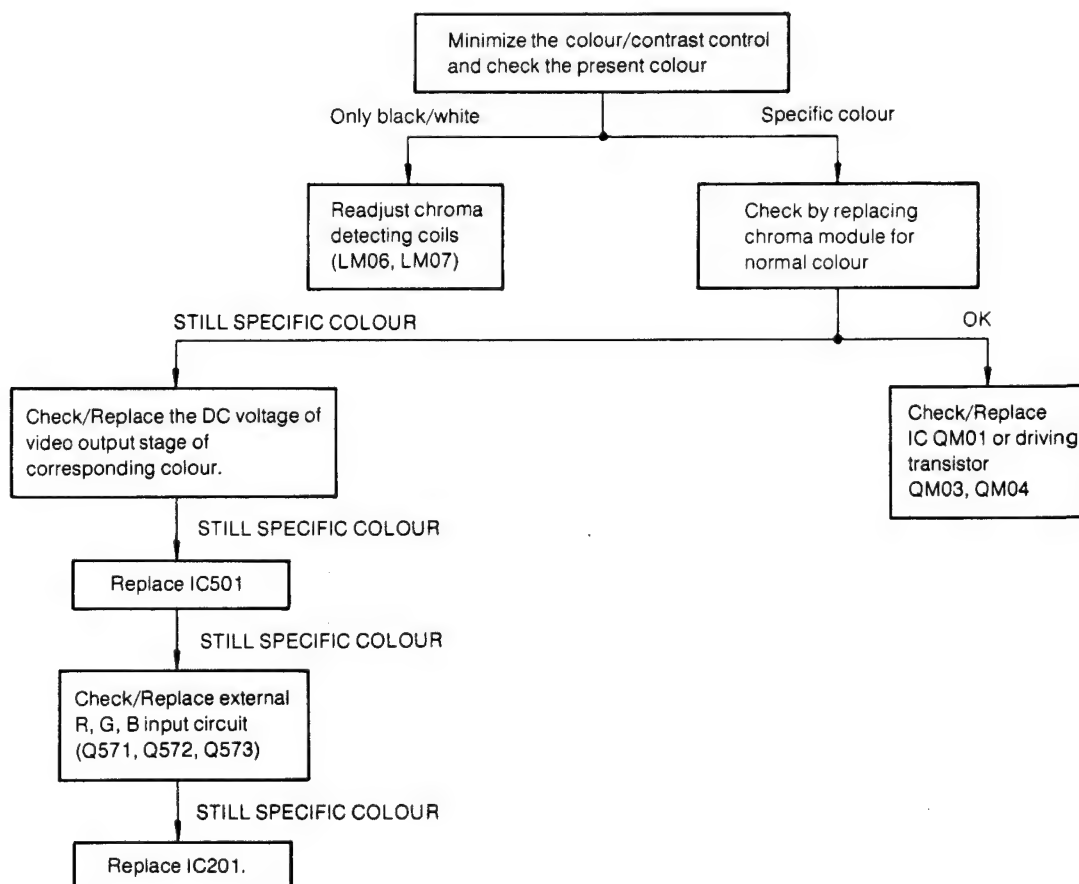
5-5. NO PICTURE (RASTER REMAINS) AND SOUND OK



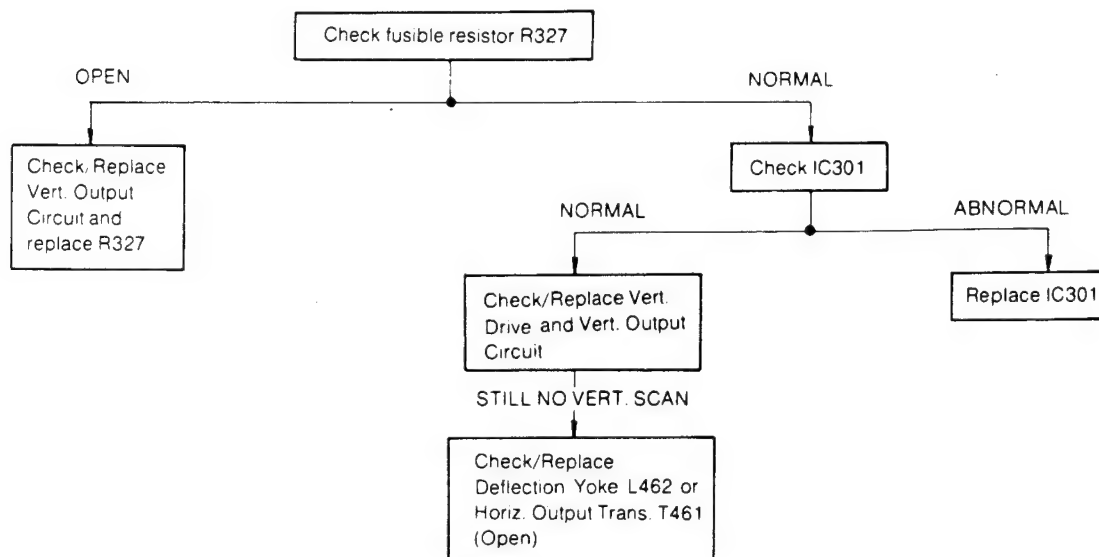
5-6. NO COLOUR



5-7. SPECIFIC TINTED COLOUR



5-8. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



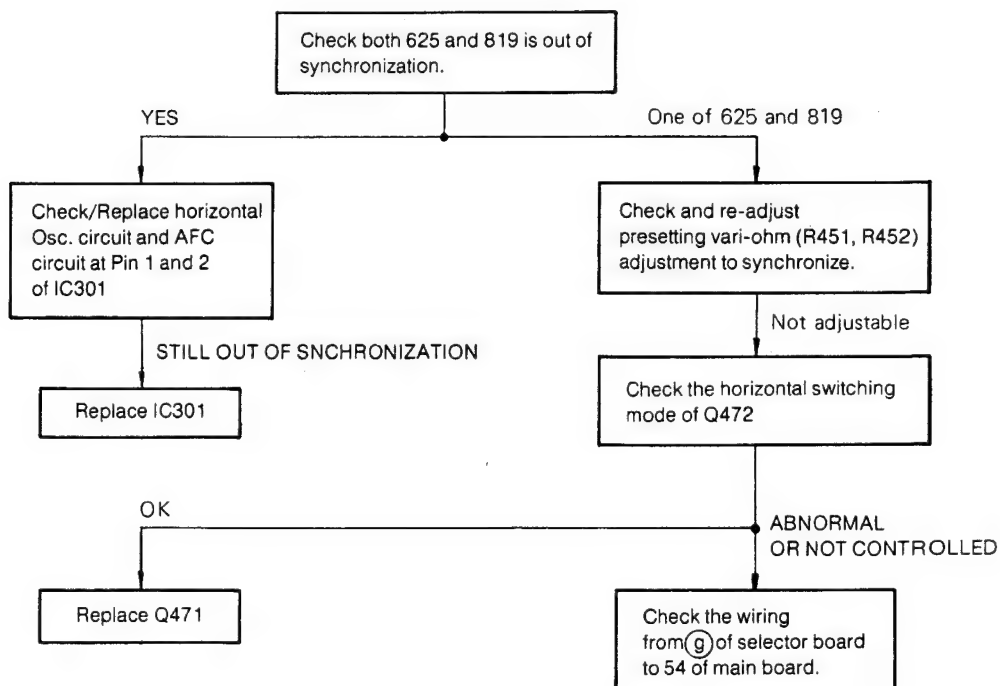
5-9. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync. Sep. Circuit from (E) of Q202 to Pin (16) of IC301 and IC301

5-10. OUT OF VERT. SYNC.

Check/Replace Vert. OSC. Circuit and Vert. Hold Circuit connected to Pins (10), (12) and (13) of IC301. Check/Replace IC301

5-11. OUT OF HORIZ. SYNC



6. CHASSIS TOP AND REAR VIEWS

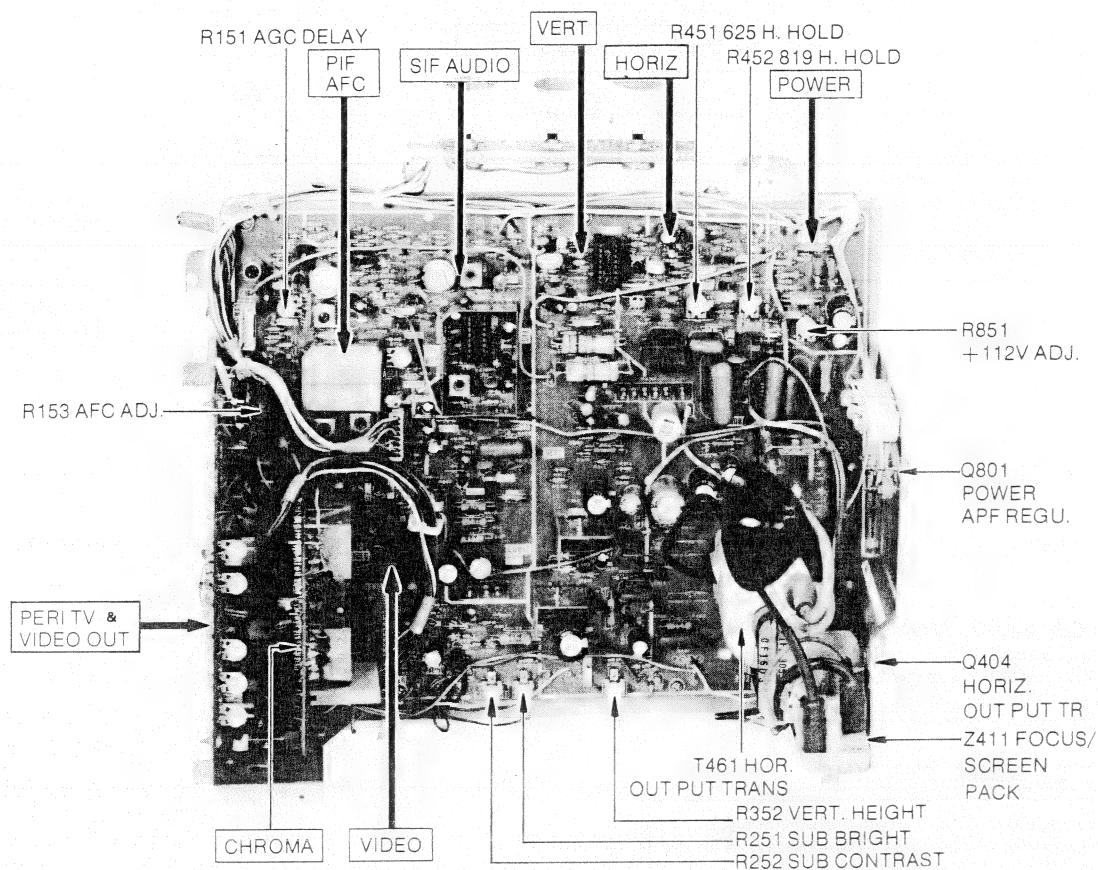


Figure 10. Chassis Top View

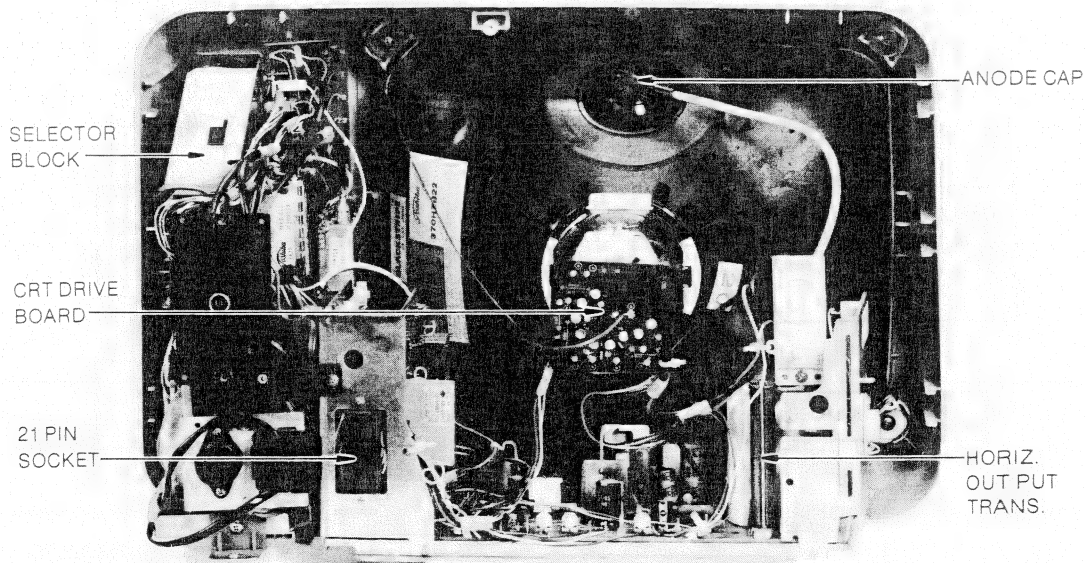


Figure 11. Chassis Rear View

7. SERVICING AID

EXTENSION CABLE

The extension cable is available when servicing the Chroma Module outside the chassis.

This extension cable is;

Part No. 23177997..... Extension Cable, 13P, for Chroma Module.

This extension cable will allow rapid inspection and remedy in troubleshooting.

However, as improper response may sometimes be caused by the stray pick-up or stray capacitance of the extension cable, the use of them should be confined to the minimum.

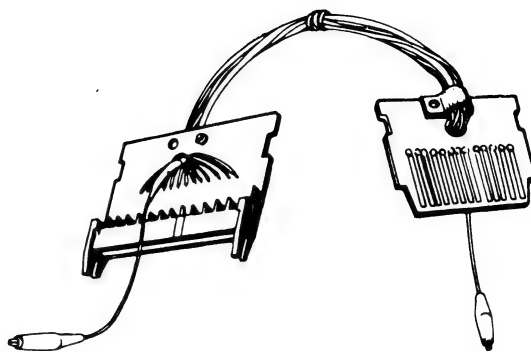


Figure 12. Extension Cable

WARNING: BEFORE SERVICING THE CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

8. INSTALLATION AND SERVICE ADJUSTMENTS

8-1. GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 230 (115) volts 50 Hz AC power outlet. Never connect to direct current or any other power outlet or frequency.

Turn the receiver ON and adjust the FINE TUNING for best picture detail with the AFC Switch in OFF position.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST, and COLOUR Controls to obtain natural colour or B/W picture. Set the AFC Switch to ON.

8-2. AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 meters before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

8-3. +112 VOLT POWER SUPPLY ADJUSTMENT

CAUTION: B + voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the B+ voltage must be properly adjusted to +112 volts.

1. Tune in an active channel. Adjust the BRIGHTNESS and CONTRAST Controls for normal picture.
2. Check that the AC power line voltage is normal. (AC 230 (115) volts, 50 Hz).
3. Connect a VTVM between Terminal TP-91 on MAIN Board (See page 22) and chassis ground.
4. Adjust the B + ADH, (R851) on MAIN Board (See page 22) for +112 volts reading. Remove the VTVM.

8-4. HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. The +112 volt power supply must be properly adjusted to insure the correct high voltage.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 25.0 kv.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 25.0 kv under any conditions.

8-5. HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync., jitter or pulsing of the picture although the AGC system is properly adjusted, it will be necessary to adjust the HORIZONTAL HOLD.

1. If these conditions appear on the screen with the channel selector at 1 to 6 position.
 - ① Tune the receiver to any active channel with the channel selector at 1 to 6 position and turn the Knob R451 (625 HORIZONTAL HOLD) counterclockwise (or clockwise) until the picture is horizontally out of synchronization.
 - ② Turn the Knob R451 clockwise (or counterclockwise) to the pull-in point, then rotate it clockwise (or counterclockwise) for 30° from the pull-in point.
2. And if the same conditions present at 7 or 8 position.
 - ① Tune the receiver to any active channel with the channel selector at 7 or 8 position and turn the Knob R452 (819 HORIZONTAL HOLD) counterclockwise (or clockwise) until the picture is out of synchronization.
 - ② Rotate the Knob R452 clockwise (or counterclockwise) for 35° from the pull-in point.

8-6. VERTICAL OSCILLATOR ADJUSTMENT

If the picture moves up or down on the screen adjust the VERTICAL HOLD Control (R351) until there is a single image without vertical movement.

8-7. HEIGHT ADJUSTMENT

HEIGHT Control (R352) on the MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 1.5 cm at top and bottom.

8-8. FOCUS ADJUSTMENT

Adjust FOCUS Control on FOCUS PACK Z411 for well defined scanning lines in the centre area of the screen.

8-9. AGC ADJUSTMENT

1. Connect a white pattern signal generator to the receiver.
2. Connect the direct probe to terminal TP12 on the Main Board.
3. Adjust AGC VR (R152) on the Main Board for 3.0 Vp-p on scope (See figure 13).

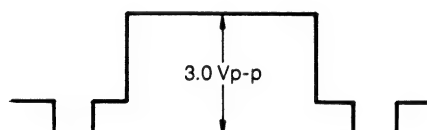


Figure 13. AGC Adjustment

8-10. DELAYED R-F AGC ADJUSTMENTS

1. Tune the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on the MAIN Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) disappears from the screen.

8-11. AFC (Automatic Frequency Control) FIELD ALIGNMENT

1. Place AFC Switch in OFF position. Tune the set to an active channel and adjust fine tuning for best picture.
2. Place AFC Switch in ON position, and adjust Trans. (L171) on MAIN Board for best picture. Picture quality should be the same as that obtained in Step 1.
3. Check the AFC PULL-IN action by turning the FINE TUNING Control clockwise and counterclockwise.

8-12. SECAM COLOUR KILLER THRESHOLD ADJUSTMENT

1. Receive the SECAM colour signal.
2. Adjust LM03 so the SECAM colour is obtained.

8-13. SECAM CHROMA DET. COIL ADJUSTMENT

1. Receive colour bar signal.
2. Adjust the CHROMA DET. COILS (LM06, LM07) so that the black and white parts are the same as white balance at the black and white signal reception.

8-14. SIF DET. COIL ADJUSTMENT (This adjustment needs the oscilloscope)

1. Tune in a programme which has a pure tone. (For example 400 Hz or 1 kHz)
2. Connect the probe of oscilloscope to Terminal TP-21 on the Main Board.
3. Adjust SIF DET. COIL L602 (See figure 21) so that the detected signal amplitude (pure tone) goes to maximum.

8-15. COLOUR PURITY ADJUSTMENT

Note: Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

Purity adjustment requires Rubber Wedge kit.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS Controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R552 and R554) to provide only a green raster. Advance the GREEN CUT OFF Control (R553) if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward or forward to provide vertical-green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 15) around the neck of the picture tube until a green belt is obtained in the centre of the screen. And at the same time, centre the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw.
8. Check the purity of the red and blue raster by adjusting the CUT OFF Controls.
9. Tighten the clamp screw of the yoke temporarily.
10. Obtain a white raster; referring to "CRT GREY SCALE ADJUSTMENT".
11. Proceed with convergence adjustment.

8-16. CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Set the COLOUR Control to minimum.
3. Disconnect the terminal P901 on the CRT SOCKET Board.
4. Turn the SCREEN Control (Z411) full counterclockwise.
5. Set the GREEN and BLUE DRIVE Controls (R557, R556) to the mid position.
6. Set the RED, GREEN and BLUE CUT OFF Controls (R552, R553, R554) to the mid position.
7. Short temporarily terminals #23 and #22 on the Main Board with a jumper wire.
8. Short temporarily terminals \textcircled{J} and \textcircled{H} on the Main Board with a jumper wire.
9. Rotate the SCREEN Control (Z411) gradually clockwise until the second horizontal colour line following the first line appears slightly on the screen. Then turn fully counterclockwise the two CUT OFF Controls corresponding to the colours of the first and the second horizontal lines to eliminate the lines.
10. Set the SCREEN Control to the position where the third horizontal line lights slightly on the screen.
11. Adjust the two CUT OFF Controls set to the minimum in item 9 above to obtain the slightly lighted horizontal line in the same levels of three (red, green, blue) colours. (The line may look like white if the CUT OFF Controls are adjusted properly.)
12. Remove a jumper wire between terminals \textcircled{J} and \textcircled{H} and reconnect the RASTER TERMINAL.
13. Remove a jumper wire between terminals #23 and #22 on the Main Board.
14. Rotate the BRIGHTNESS and CONTRAST Controls to the maximum.
15. Adjust the BLUE and GREEN DRIVE Controls to obtain proper white-balanced picture in high light areas.
16. Rotate the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

8-17. SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR to the centre.
4. Set the SUB-BRIGHT. Control (R251) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the Controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

8-18. CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 15) and superimpose red and blue vertical lines in the centre area of the picture screen. (See figure 15.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 16.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 with understanding red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual affection and it makes dots movement complex.

■ Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 14 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 16.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 14.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges as shown in figure 14.

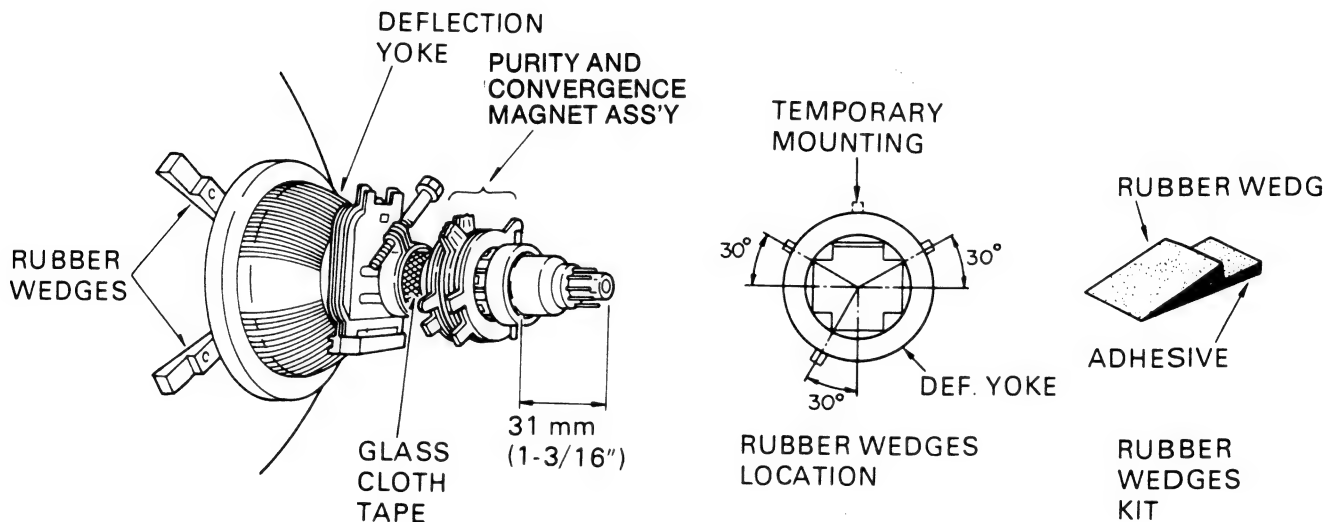


Figure 14.

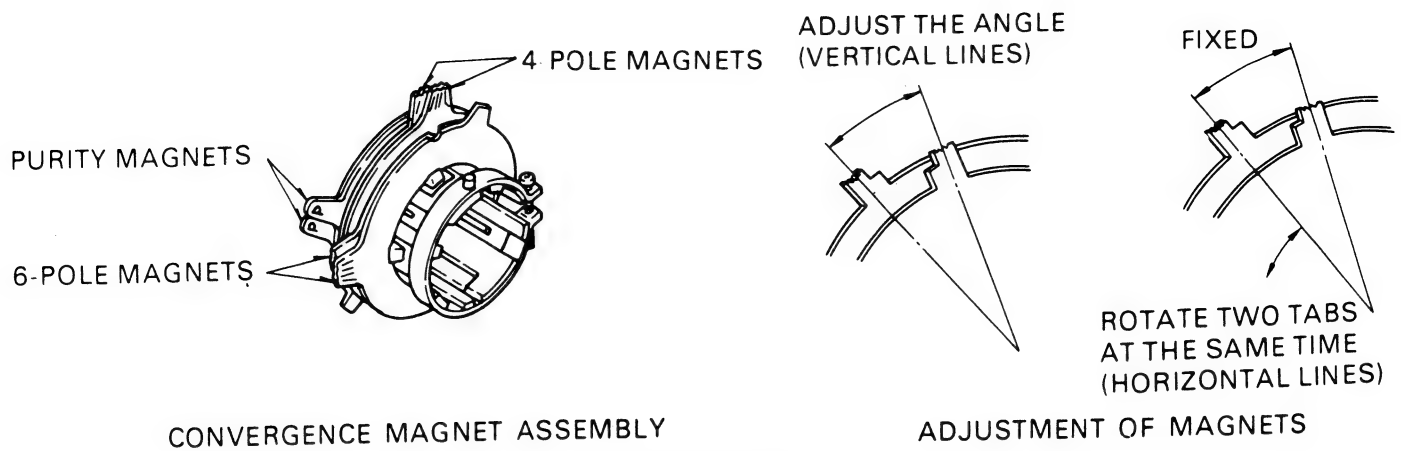
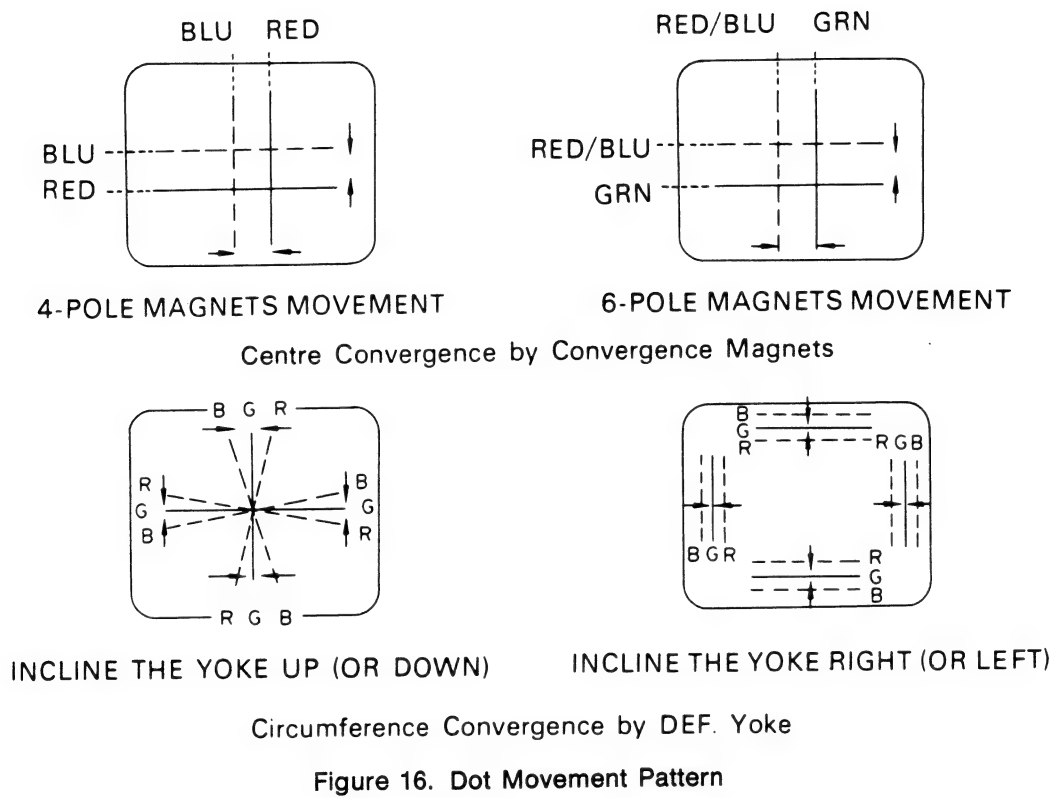


Figure 15.



9. GENERAL ALIGNMENT INSTRUCTIONS

9-1. GENERAL

Alignment is an exacting procedure and should be under-taken only when necessary.

The test equipment specified or its equivalent is required to properly perform the alignment procedures which are outlined on the following pages. Use of equipment which does not meet these requirements may result in the inability to properly align the receiver.

It is essential that bias values as specified are maintained during alignment to insure proper results.

9-2. EQUIPMENT TERMINATIONS

Alignment pads are designed for correct matching of the equipment to the circuits involved. Failure to use proper matching will result in responses which cannot be depended upon as representing the true operation of the receiver. The pads should be constructed as compactly as possible with all unshielded leads not in excess of 2.5 cm long.

9-3. SIGNAL OVERLOAD

Use of excessive signal from the sweep generator can cause overloading of receiver circuits. To determine that this condition is not present and that the response curve is true, turn the sweep generator output to zero and then gradually increase the output until a response is obtained. Further increase of the sweep output should not change the configuration of the response except in amplitude. If the response changes in configuration, just as flattening at the top or dropping below the base line at the bottom, decrease the sweep output to restore the proper configuration. The oscilloscope gain should be as high as possible to maintain a useable pattern with the peak-to-peak values specified, thus requiring a lower output from the sweep generator and less chance of overload.

Insertion of markers from the marker generator should not cause distortion of the response.

9-4. TEST EQUIPMENTS

OSCILLOSCOPE (WIDE BAND)
COLOUR-BAR/DOT/CROSSHATCH GENERATOR
TV SWEEP MARKER ALIGNMENT GENERATOR
VACUUM TUBE VOLTMETER
VOLT-OHM MILLIAMMETER
MARKER GENERATOR
POWER AND AGC BIAS SUPPLY
DIRECT LOW CAPACITY PROBE
SOUND SIGNAL GENERATOR
VIDEO SWEEP GENERATOR
MATCHING PAD (See figure 17)
DEGAUSSING COIL—Demagnetized picture tube and chassis.

MICROSCOPE—Microscope of approximately 12 power for phosphor dot observation in the colour picture tube.

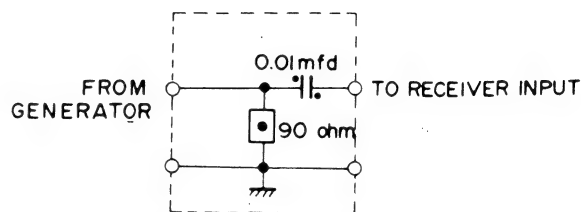


Figure 17. Matching Pad

10. PICTURE I-F SWEEP ALIGNMENT

GENERAL.....	Refer to figures 18 and 19 for test equipment connection and alignment points.
PRELIMINARY STEPS.....	<ol style="list-style-type: none"> 1. Disconnect the I-F cable from the input jack "P501" and the tuner leads from the plug "P510" on the Main Board. (See figure 21.) 2. Supply +12v to terminal "#46" on the Main Board. 3. Supply +3.5~4.5 volts bias to terminal "TP-14" on the Main Board fully clockwise. 4. Turn AGC DELAY Control (R151) on the Main Board fully clockwise.
SWEEP/MARKER GENERATOR.....	Connect to the input jack "P501" on the Main Board.
OSCILLOSCOPE.....	Tune to 25 ~ 40 MHz sweep.
	Connect with direct probe to terminal "TP-12" on the Main Board through 100k ohm resistor.

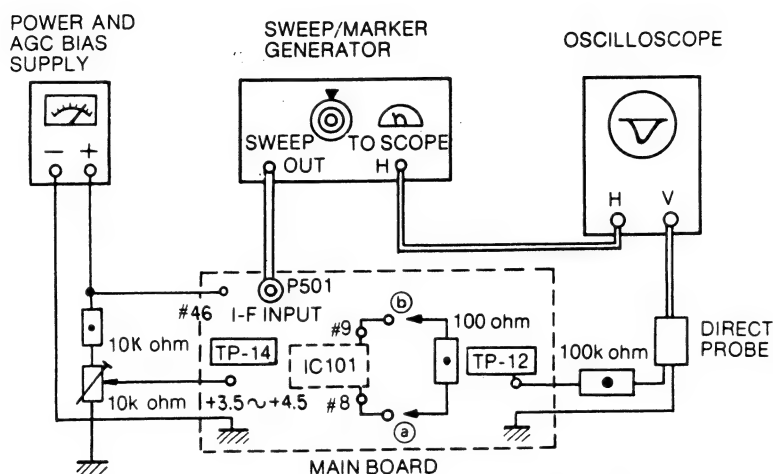


Figure 18. Picture I-F Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
L103 ALIGNMENT			
Set Oscilloscope gain for 0.1 v/cm. Adjust sweep output for easy alignment. (See figure 19.) Adjust +3.5~4.5 volts bias to terminal "TP-14" on the Main Board.			
Detector Coil	32.7 MHz Marker "ON"	L 103	Adjust L 103 for maximum gain at 32.7 MHz on SCOPE. (See figure 19.)
OVERALL RESPONSE ALIGNMENT			
Observe with 0.5 volt P-P on SCOPE. Adjust sweep output for easy alignment. (0.1 v/cm) Attach 100 ohm resistor between point ③ and ⑤ (pins #8 and #9 of IC101) of the foil side of the Main Board. (See figure 21.) Adjust +3.5~4.5 volts bias to terminal "TP-14" on the Main Board.			
I-F Overall Response	34.7 MHz Marker "ON"	L102	Adjust L 102 for maximum gain at 34.7 MHz on SCOPE. (See figure 19.)
After completing the above steps, disconnect equipment and adjust the AGC DELAY Control (R151) following DELAYED R-F AGC ADJUSTMENT on page 16.			

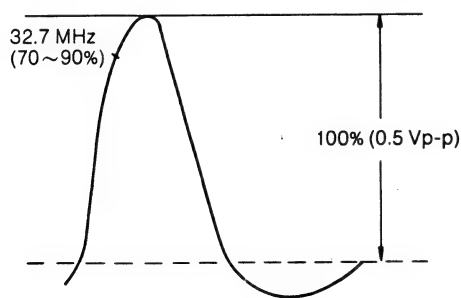


Figure 19. Magnified Response Curve

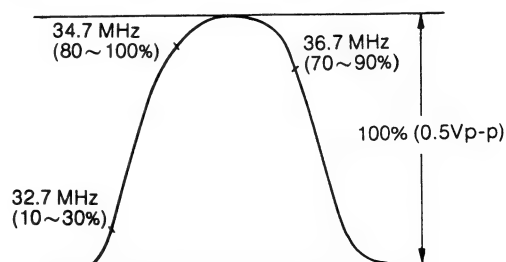


Figure 20. Overall Response Curve

11. AFC ALIGNMENT

GENERAL..... Refer to figure 21 and 22 for alignment points and test equipments connection.
PRELIMINARY STEPS Follow the same steps as given under PICTURE I-F SWEEP ALIGNMENT on page 21.
SWEAP/MARKER GENERATOR Connect the tuner leads "M510" to socket "P510" on the Main Board.
OSCILLOSCOPE..... Connect direct probe to terminal #44 on the Main Board.

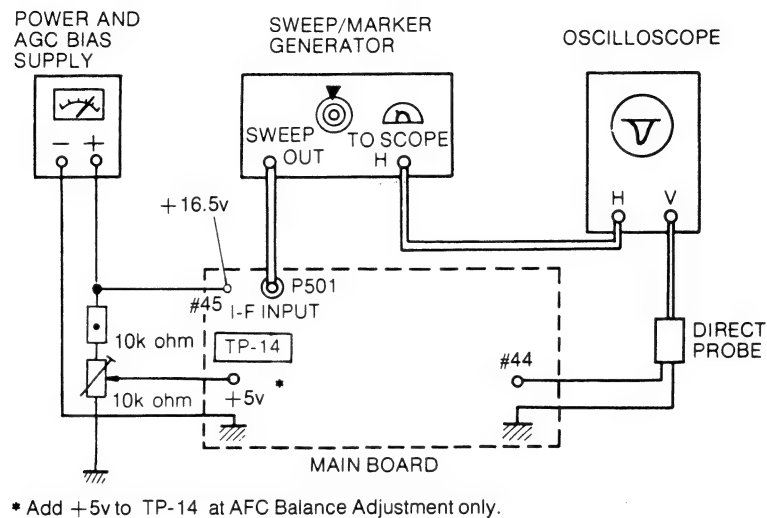


Figure 22. AFC Alignment

STEP	SWEAP/MARKER GENERATOR	ADJUST	REMARKS
1. AFC Balance	NO SIGNAL	R153	Supply +5 volts bias to terminal "TP-14" on the Main Board. Pull AFC Switch out to the ON position. Connect the ground side of VTVM to Terminal #21 and hot side of pin #1 of ICA73 on the SELECTOR BOARD. Adjust R153 (BALANCE ADJUST) for +0.6 volt reading on meter.
2. Primary fo	32.7 MHz	L171	Remove the power supply (+5 volts) from the terminal "TP-14" on the Main Board. Remove the VTVM. Connctet Direct Probe to Terminal #44 on the Main Board. Adjust L171 for the response shown in figure 23.

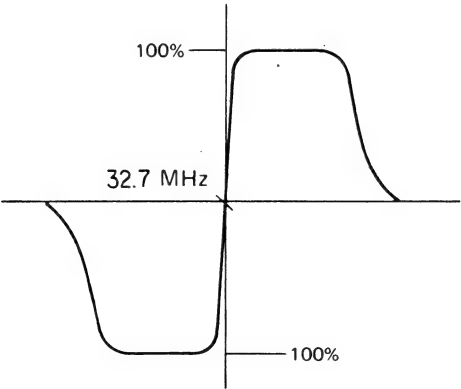


Figure 23. AFC Responses

12. SECAM COLOUR ALIGNMENT

12-1. BELL FILTER ALIGNMENT (See figure 25)

1. Receive a colour bar pattern.
2. Connect synchroscope to pin 25 of QM01 (TA7621P).
3. Adjust LM02 so that each bar of R-Y becomes even respectively.

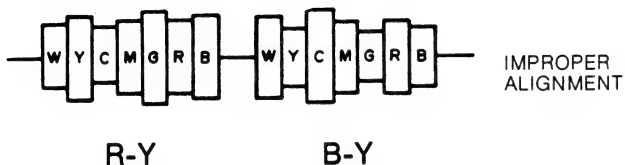
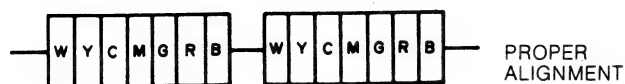


Figure 24.

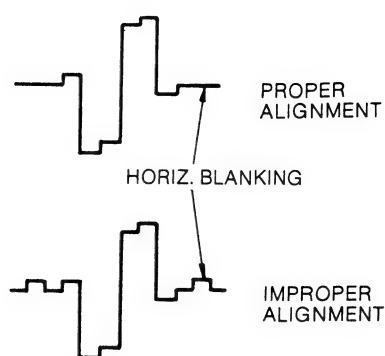
12-2. SECAM COLOUR KILLER ALIGNMENT

1. Receive a colour signal.
2. Connect a VTVM to TP-M3.
3. Adjust LM03 so the DC voltage is minimum.

12-3. SECAM CHROMA DET. COIL ALIGNMENT (See figure 26)

1. Receiver a colour bar pattern.
2. Connect synchroscope to terminal M4 on the CHROMA MODULE.
3. Adjust LM06 so that non colour part and Horiz Blanking part are on the same level. (R-Y)
4. Further, change connection of synchroscope from terminal M4 to terminal M5 and adjust LM07 the same as above.

R-Y



B-Y

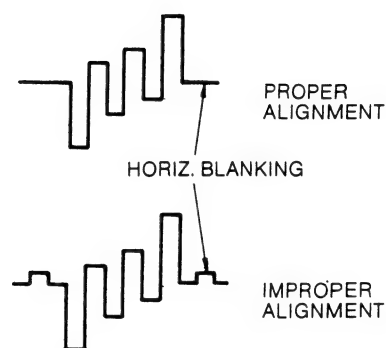


Figure 25.

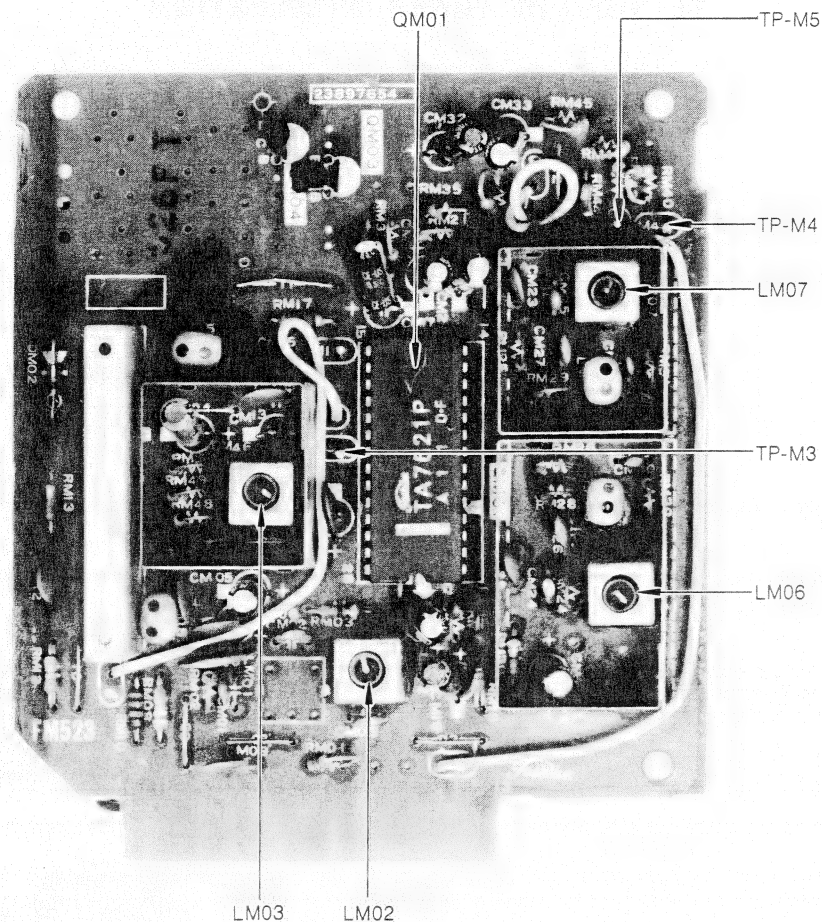


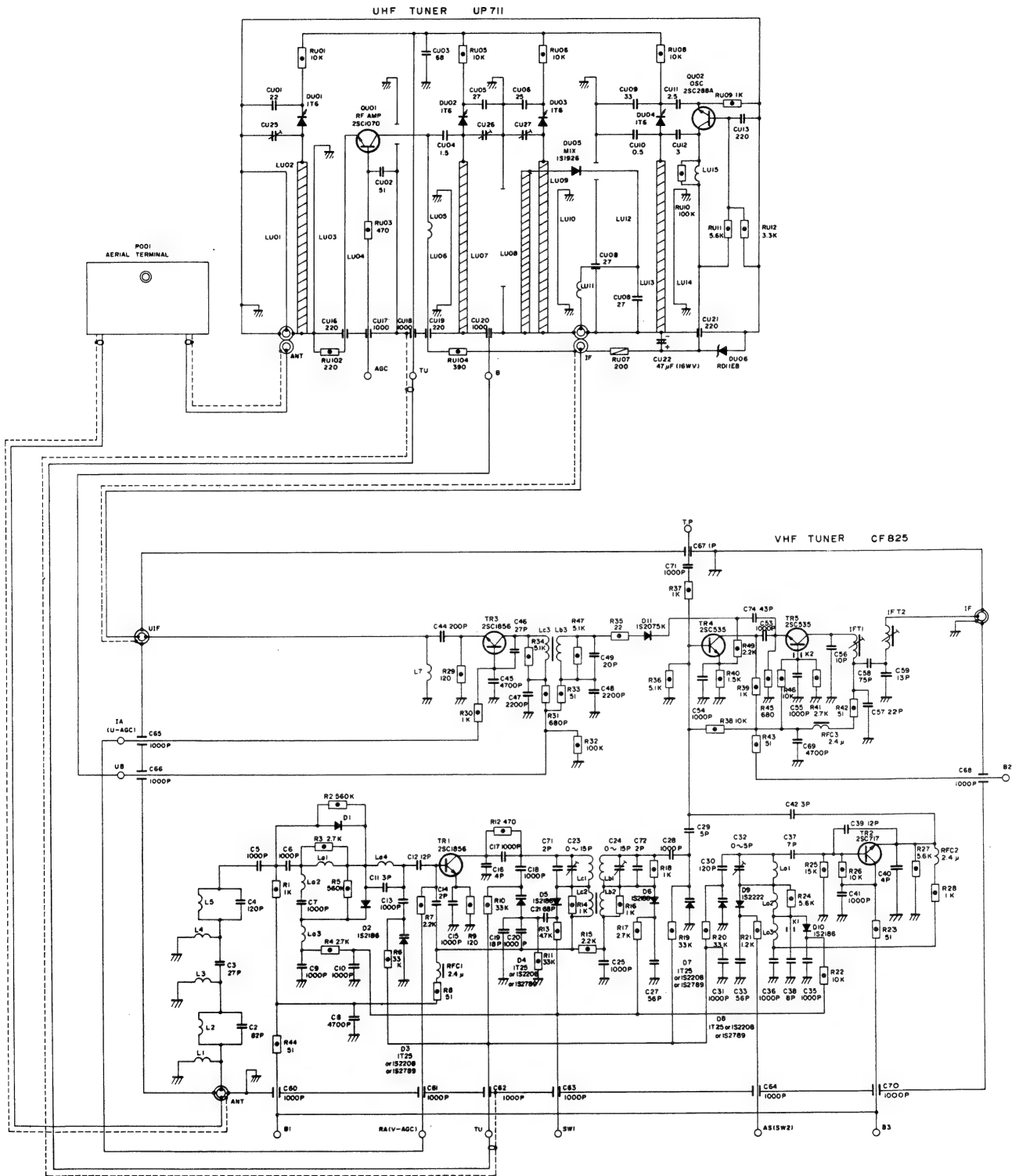
Figure 26. Chroma Module

13. CHROMA TRAP (4.43 MHz) ALIGNMENT

13-1. CHROMA TRAP (L201)

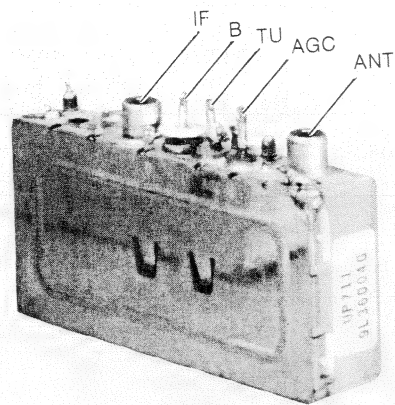
1. Tune the receiver telecasting in colour. A Colour bar pattern, for example, PHILIPS pattern is more available for the this alignment.
2. Connect oscilloscope through 10:1 probe to TP-47R on the CRT Socket Board.
3. Adjust CHROMA trap L201 on the Main Board so as to minimize the chroma component in colour bar area.

14. VHF/UHF TUNER INFORMATION

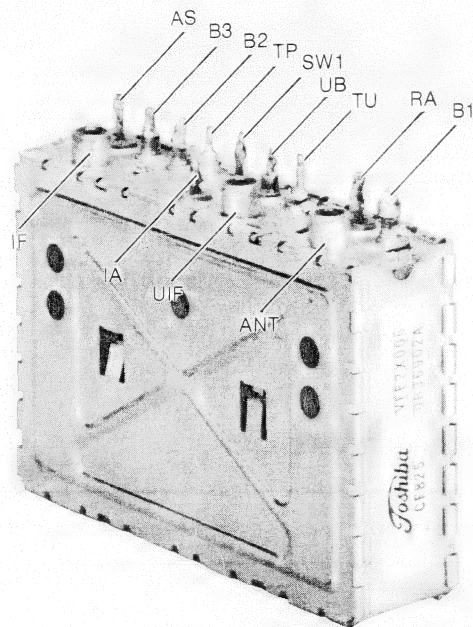


15. VHF/UHF TUNER

15-1. UHF TUNER



15-2. VHF TUNER



16. CABINET EXPLODED VIEW AND REPAIR PARTS LIST

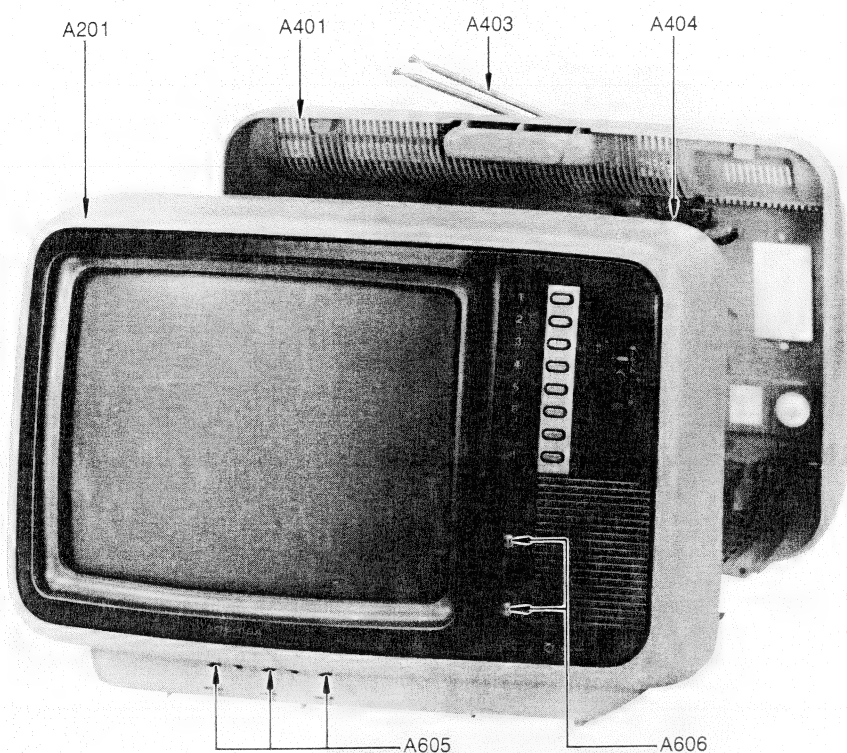


Figure 27. Cabinet Exploded View

CABINET REPAIR PARTS LIST

Schematic Location	Part No.	Description
A201	23824141	Front Cover
A401	23803032	Back Cover
A403	23124076	Telescopic Rod Aerial
A404	23142339	Aerial Balun Trans.
A605	23826858	Knob, COLOUR, BRIGHT, VERT. HOLD (3 used)
A606	23826084	Knob, POWER SWITCH/VOLUME, AFC/CONTRAST (2 used)

17. CHASSIS PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

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AVVREUATUIBS: Capacitors..... CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic
Resistors CF: Carbon Film, CC: Carbon Composition, MF: Metal Film,
OMF: Oxide Metal Film, VR: Variable Resistor, FR: Fusible Resistor

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
PERI TV & VIDEO OUT PUT BOARD					
U501	23139436	Peri TV & Video Out Put Board Assembly, PW2377	R286,R576 } R583,R590 }	24360820	CF, 82 ohm, 1/8w
CAPACITORS			R287	24360390	CF, 39 ohm, 1/8w
C271	24635220	EL, 22 μ F, 35v	R288	24360100	CF, 10 ohm, 1/8w
C272,C273	24633101	EL, 100 μ F, 16v	R289	24360221	CF, 220 ohm, 1/8w
C295	24212102	CD, 1000pF, 50v	R290	24360222	CF, 2200 ohm, 1/8w
C511	24692104	PF, 0.1 μ F, \pm 5%, 50v	R291,R528 } R538,R548 }	24360152	CF, 1500 ohm, 1/8w
C521	24436330	CD, 33pF, \pm 5%, 50v	R296	24360750	CF, 75 ohm, 1/8w
C531	24436390	CD, 39pF, \pm 5%, 50v	R521,R531 } R541 }	24380561	CF, 560 ohm, 1/8w
C541	24436270	CD, 27pF, \pm 5%, 50v	R522,R532 } R542 }	24383223	OMF, 22k ohm, 2w
C562,C563 } C564 }	24636010	EL, 1 μ F, 50v	R523,R533 } R543 }	24381222	OMF, 2.2k ohm, 1/2w
C565,C571 } C572,C573 }	24633100	EL, 10 μ F, 16v	R524,R534 } R544 }	24381683	OMF, 68k ohm, 1/2w
C671			R525,R535 } R545,R680 }	24360822	CF, 8200 ohm, 1/8w
C591,C592 } C593 }	24434030	CD, 3pF, \pm 0.5pF, 500v	R526,R536 } R563 }		
C672	24636229	EL, 2.2 μ F, 50v	R571,R572 } R578,R579 }	24360471	CF, 470 ohm, 1/8w
C673	24634101	EL, 100 μ F, 25v	R585		
C674	24212221	CD, 220pF, \pm 10%, 50v	R527,R537 } R547,R681 }	24360272	CF, 2700 ohm, 1/8w
C902	24214103	CD, 0.01 μ F, \pm 10%, 500v	R682		
RESISTORS			R546,R676 } R678 }	24360681	CF, 680 ohm, 1/8w
R271,R276 } R574,R581 }	24360153	CF, 15k ohm, 1/8w	R552,R553 } R554,R556 }	24061771	VR, 10k ohm, 0.3w
R588			R557		
R272,R677	24360392	CF, 3900 ohm, 1/8w	R564,R573 } R580,R587 }	24360104	CF, 100k ohm, 1/8w
R273	24360301	CF, 300 ohm, 1/8w	R568,R569	24360562	CF, 5.6k ohm, 1/8w
R274,R567 } R674 }	24360332	CF, 3.3k ohm, 1/8w	R586,R562	24360561	CF, 560 ohm, 1/8w
R275	24360560	CF, 56 ohm, 1/8w	R592,R593 } R594 }	24946102	CC, 1k ohm, 1/2w
R278,R284	24360303	CF, 30k ohm, 1/8w	R671	24360333	CF, 33k ohm, 1/8w
R279,R292 } R295,R565 }	24360103	CF, 10k ohm, 1/8w	R672	24360224	CF, 220k ohm, 1/8w
R280,R283	24360470	CF, 47 ohm, 1/8w	R673	24360823	CF, 82k ohm, 1/8w
R281,R575 } R582,R589 }	24360101	CF, 100 ohm, 1/8w	R679	24360123	CF, 12k ohm, 1/8w
R675					
R282,R561	24360102	CF, 1000 ohm, 1/8w			
R285	24360203	CF, 20k ohm, 1/8w			

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Schematic Location	Part No.	Description
COILS AND TRANSFORMERS		
L521, L531 L541	23261053	Coil, AZ9246G, Choke
SEMICONDUCTORS		
IC501	23119826	Integrated Circuit, TDA-2530, MATRIX
Q271	A6319302	Transistor, 2SC1959-Y
Q272, Q273 Q275, Q291 Q561, Q571 Q572, Q573 Q671, Q672 Q673	A6317547	Transistor, 2SC1815-Y
Q274	A6534045	Transistor, 2SA1015-Y
Q521, Q522 Q531, Q532 Q541, Q542	A6319400	Transistor, 2SC2068
D271, D521 D522, D531 D532, D541 D542, D561 D511	A7246711	Diode, 1S1555 (TV)
	A7110102	Zener Diode, 0.5Z6.8L
MISCELLANEOUS		
P521	23164790	Plug, 10P
P525	23116562	Socket, 21P
P551	23164789	Plug, 9P
IC501A	23116947	Socket, 16P
SECAM CHROMA MODULE		
U502	23148802	Secam Chroma Module Assembly, FM-523
CAPACITORS		
CM01, CM02	24436101	CD, 100pF, 50v
CM03	24436151	CD, 150pF, 50v
CM04, CM34	24636010	EL, 1μF, 50v
CM05, CM17 CM20, CM21 CM32, CM33	24633100	EL, 10μF, 16v
CM06, CM07 CM08, CM14 CM15	24232103	CD, 10000pF, +80%, -20%, 50v
CM13	24867473	PF, 47000pF, ±5%, 50v
CM19	24633330	EL, 33μF, 16v

Schematic Location	Part No.	Description
CM22, CM23	24232102	CD, 1000pF, ±80%, -20%, 50v
CM24	24357080	CD, 8pF, ±0.25pF, 50v
CM25	24340080	CD, 8pF, 50v
CM26, CM27	24436201	CD, 200pF, ±5%, 50v
CM28, CM29	24436120	CD, 12pF, ±5%, 50v
CM30	24212681	CD, 680pF, ±10%, 50v
CM31	24212821	CD, 820pF, ±10%, 50v
CM46	24636478	EL, 0.47μF, 50v
CM50	24436331	CD, 330pF, ±5%, 50v
CM61	24692102	PF, 1000pF, ±5%, 50v
CM63	24212102	CD, 1000pF, ±10%, 50v
CM64	24617997	EL, 2.2μF, 50v
RESISTORS		
RM01	24380751	CF, 750 ohm, 1/8w
RM02, RM42	24380272	CF, 2.7k ohm, 1/8w
RM03	24360471	CF, 470 ohm, 1/8w
RM04	24380104	CF, 100k ohm, 1/8w
RM07, RM28 RM29	24380152	CF, 1.5k ohm, 1/8w
RM12	24360333	CF, 33k ohm, 1/8w
RM13	24360103	CF, 10k ohm, 1/8w
RM15	24360391	CF, 390 ohm, 1/8w
RM16, RM62	24360272	CF, 2700 ohm, 1/8w
RM17	24360681	CF, 680 ohm, 1/8w
RM19	24381151	OMF, 150 ohm, 1/2w
RM20	24360431	CF, 430 ohm, 1/8w
RM21, RM48	24380431	CF, 430 ohm, 1/8w
RM24, RM25	24380432	CF, 4.3k ohm, 1/8w
RM30	24380681	CF, 680 ohm, 1/8w
RM31	24380331	CF, 330 ohm, 1/8w
RM33	24380153	CF, 15k ohm, 1/8w
RM35	24380223	CF, 22k ohm, 1/8w
RM40	24380103	CF, 10k ohm, 1/8w
RM41	24380472	CF, 4.7k ohm, 1/8w
RM43	24380622	CF, 6.2k ohm, 1/8w
RM44	24360562	CF, 5.6k ohm, 1/8w
RM45	24380332	CF, 3.3k ohm, 1/8w
RM49	24380101	CF, 100 ohm, 1/8w
RM54	24380151	CF, 150 ohm, 1/8w
RM55	24380333	CF, 33k ohm, 1/8w
RM61	24360182	CF, 1800 ohm, 1/8w
RM63	24360102	CF, 1000 ohm, 1/8w
RM64	24941225	CC, 2.2M ohm, 1/4w
	or 24945225	CC, 2.2M ohm, 1/4w

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Schematic Location	Part No.	Description	Schematic Location	Part No.	Description		
COILS AND TRANSFORMERS			R852	24061954	VR, 2k ohm, 1/2w, B-Type		
LM02	23272987	Coil, TRF5415, Filter	R880	24000987	Posistor, 10 ohm, 125v		
LM03	23272989	Coil, TRF5413, Ident Detector	SEMICONDUCTORS				
LM04,LM05	23283829	Coil, TRF4829J, Peaking	Q821	A6841475	NPN, Transistor, 2SD525Y		
LM06,LM07	23272988	Coil, TRF5414	Q822,Q823	A6317547	Transistor, 2SC1815-Y		
LM08,LM09	23283121	Coil, TRF4121J, Peaking	D801,D802	A7568719	Diode, 1S1887		
			D803,D804				
SEMICONDUCTORS			D821,D822	A7568615	Diode, 1S1886		
ICM01	B0355900	IC, TA7621P, Secam Demod	D823	A7286120	Zener Diode, 02Z6.2w, FA-1		
QM03,QM04	A6317547	NPN, Transistor, 2SC1815-Y	MISCELLANEOUS				
QM05			F802	23144925	Fuse, 1.2A		
DM02,DM03	A7246711	Diode, 1S1555 (TV)	F802A,F803A	23165102	Fuse holder for P.C. Board		
DM61			F803	23144969	Fuse, 0.63A		
MISCELLANEOUS							
XM01	23153992	1H, Delay Line, Secam					
POWER-I BOARD			CRT SOCKET BOARD				
U801	23139441	Power-I Board Assembly, PW2372	U901	23139439	CRT Socket Board Assembly, PW2374		
CAPACITORS			CAPACITORS				
C813	24098011	MP, 0.1 μ F, \pm 20%, AC 250v	C901	24210331	CD, 330pF, \pm 20%, 1kv		
	or 24099971	Paper, 0.1 μ F, \pm 20%, AC 450v	RESISTORS				
COILS AND TRANSFORMERS			R901,R902	24946392	CC, 3900 ohm, 1/2w		
T801	23211984	Coil, TRF3015, Line Filter	R903				
MISCELLANEOUS			MISCELLANEOUS				
F801	23144959	Fuse, 3.15A	V901A	23116620	CRT, Socket		
F801A	23165102	Fuse Holder for P.C. Board					
POWER-2 BOARD			MAIN BOARD				
U802	23139440	Power-2 Board Assembly, PW2373	U902	23139438	Main Board Assembly, PW2375		
CAPACITORS			CAPACITORS				
C801	24095309	PF, 0.1 μ F, \pm 20%, 160v	C101,C104	24232103	CD, 10000pF, + 80%, - 20%, 50v		
C802,C803	CD, 4700pF, + 100, - 0%, 160v		C106,C107				
C804,C803			C114,C161				
C806	24640985	EL, 470 μ F, 160v	C162,C163				
C821	24636102	EL, 1000 μ F, 50v	C171,C172				
C822	24634221	EL, 220 μ F, 25v	C409,C502				
C823,C824	24636479	EL, 4.7 μ F, 50v	C604,C606				
RESISTORS			C610,C611				
R821,R822	24360103	CF, 10k ohm, 1/8w	C612,C631				
R823	24360222	CF, 2200 ohm, 1/8w	C632,C633				
R824	24360472	CF, 4700 ohm, 1/8w	C634,C635				
R825	24378272	CF, 2700 ohm, 1/8w	C636,C637				
			C640				

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Schematic Location	Part No.	Description
C102,C601	24212102	CD, 1000pF, $\pm 10\%$, 50v
C103	24602104	PF, 0.1 μ F, $\pm 10\%$, 50v
C105,C108	24633330	EL, 33 μ F, 16v
C110	24436201	CD, 200pF, $\pm 5\%$, 50v
C112	24632470	EL, 47 μ F, 10v
C113	24617982	EL, 10 μ F, 16v
C115	24635220	EL, 22 μ F, 35v
C116	24692104	PF, 0.1 μ F, $\pm 5\%$, 50v
C121	24633331	EL, 330 μ F, 16v
C173,C174	24436758	CD, 0.75pF, 50v
C175	24538224	PF, 0.22 μ F, $\pm 5\%$, 50v
C201,C231 } C233 }	24633100	EL, 10 μ F, 16v
C203	24632101	EL, 100 μ F, 10v
C204	24436470	CD, 47pF, $\pm 5\%$, 50v
C221	24436471	CD, 470pF, $\pm 5\%$, 50v
C222,C224 } C605 }	24436101	CD, 100pF, $\pm 5\%$, 50v
C232,C241 } C301,C308 }		
C404,C406 } C603,C608 }	24636010	EL, 1 μ F, 50v
C613		
C242	24636100	EL, 10 μ F, 50v
C302	24868103	PF, 0.01 μ F, $\pm 10\%$, 50v
C303	24212471	CD, 470pF, $\pm 10\%$, 50v
C304	24692222	PF, 2200pF, $\pm 5\%$, 50v
C305	24692153	PF, 0.015 μ F, $\pm 5\%$, 50v
C306	24692224	PF, 0.22 μ F, $\pm 5\%$, 50v
C307	24212392	CD, 0.0039 μ F, $\pm 10\%$, 50v
C309	24617981	EL, 2.2 μ F, 50v
C310,C402	24636478	EL, 0.47 μ F, 50v
C311	24636101	EL, 100 μ F, 50v
C312	24635100	EL, 10 μ F, 35v
C313	24640989	EL, 4.7 μ F, 160v
C314	24828203	PF, 0.020 μ F, $\pm 5\%$, 200v
C316	24636221	EL, 220 μ F, 50v
C317	24617997	EL, 2.2 μ F, 50v
C318	24219332	CD, 3300pF, $\pm 20\%$, 500v
C401	24692822	PF, 0.0082 μ F, $\pm 5\%$, 50v
C403,C472	24692562	PF, 5600pF, $\pm 5\%$, 50v
C405	24598362	PF, 3600pF, $\pm 5\%$, 50v
C407	24217102	CD, 1000pF, $\pm 20\%$, 50v
C408,C810	24642339	EL, 3.3 μ F, 160v
C411	24212152	CD, 1500pF, $\pm 10\%$, 50v

Schematic Location	Part No.	Description
C413	24214222	CD, 2200pF, $\pm 10\%$, 500v
C414	24828473	PF, 0.047 μ F, $\pm 5\%$, 250v
C416	24214681	CD, 680pF, $\pm 10\%$, 500v
C431	24214221	CD, 220pF, $\pm 10\%$, 500v
C432	24644100	EL, 10 μ F, 250v
△ C440	24095517	MT, 7500pF, $\pm 5\%$, 1.6kv
△ C442	24828204	PF, 0.2 μ F, $\pm 5\%$, 200v
△ C443	24828104	PF, 0.1 μ F, $\pm 5\%$, 200v
C445	24833563	PF, 0.056 μ F, $\pm 10\%$, 200v
C448	24640992	EL, 33 μ F, 160v
C471	24617998	EL, 1 μ F, 50v
C481	24642100	EL, 10 μ F, 160v
C482	24214561	CD, 560pF, $\pm 10\%$, 500v
C483,C622	24642220	EL, 22 μ F, 160v
C501	24212681	CD, 680pF, $\pm 10\%$, 50v
C602	24633220	EL, 22 μ F, 16v
C607	24635479	EL, 4.7 μ F, 50v
C609	24633470	EL, 47 μ F, 16v
C614	24828683	PF, 68000pF, $\pm 5\%$, 200v
C615	24436300	CD, 30pF, $\pm 5\%$, 50v
C616,C617	24214102	CD, 1000pF, $\pm 10\%$, 500v
C618	24085040	EL, 2.2 μ F, 250v
C621	24633101	EL, 100 μ F, 16v
C808	24642330	EL, 33 μ F, 160v
C809	24634102	EL, 1000 μ F, 25v
C830	24633221	EL, 220 μ F, 16v
RESISTORS		
R101,R109	24360222	CF, 2200 ohm, 1/8w
R102,R308	24360393	CF, 39k ohm, 1/8w
R103,R106 } R107,R333 }	24360331	CF, 330 ohm, 1/8w
R105	24380104	CF, 100k ohm, 1/8w
R108,R306	24360242	CF, 2400 ohm, 1/8w
R110,R214 } R223 }	24360272	CF, 2700 ohm, 1/8w
R111,R175 } R617 }	24360332	CF, 3.3k ohm, 1/8w
R112,R508 } R607 }	24360682	CF, 6800 ohm, 1/8w
R113,R204 } R217,R307 }	24360392	CF, 3900 ohm, 1/8w
R616 } R114,R242 }	24360302	CF, 3k ohm, 1/8w
R315		

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Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
R115,R235 } R513	24360104	CF, 100k ohm, 1/8w	R231,R232 } R238,R305	24360472	CF, 4700 ohm, 1/8w
R118,R803	24946184	CC, 180k ohm, 1/2w	R502,R504 } R506,R604		
R119,R225 } R637	24360223	CF, 22k ohm, 1/8w	R608		
R121	24383680	OMF, 68 ohm, 2w	R237,R314	24360473	CF, 47k ohm, 1/8w
R151	24061781	VR, 50k ohm, 0.3w	R623	24360753	CF, 75k ohm, 1/8w
R152	24061786	VR, 1k ohm, 0.3w	R243	24360134	CF, 130k ohm, 1/8w
R153	24061780	VR, 100k ohm, 0.3w	R661	24360823	CF, 82k ohm, 1/8w
R161,R203 } R241,R603	24360101	CF, 100 ohm, 1/8w	R244	24360154	CF, 150k ohm, 1/8w
R162,R205 } R206,R215	24360102	CF, 1000 ohm, 1/8w	R251	24061771	VR, 10k ohm, 0.3w
R233,R320			R252	24061770	VR, 20k ohm, 0.3w
R472,R473 } R602,R612			R301	24360201	CF, 200 ohm, 1/8w
R632,R638 } R639			R302	24360564	CF, 560k ohm, 1/8w
R163,R224 } R631	24360562	CF, 5.6k ohm, 1/8w	R304,R515	24360132	CF, 1300 ohm, 1/8w
R164,R633 } R634	24360221	CF, 220 ohm, 1/8w	R309	24360244	CF, 240k ohm, 1/8w
R165,R211 } R601	24360561	CF, 560 ohm, 1/8w	R310	24360684	CF, 680k ohm, 1/8w
R166,R635	24360270	CF, 27 ohm, 1/8w	R311	24360363	CF, 36k ohm, 1/8w
R171,R202 } R441,R442	24360103	CF, 10k ohm, 1/8w	R313	24360243	CF, 24k ohm, 1/8w
R509,R605 } R690			R316	24360912	CF, 9.1k ohm, 1/8w
R173,R216 } R470			R317,R318	24381122	OMF, 1.2k ohm, 1/2w
R174,R471	24360683	CF, 68k ohm, 1/8w	R321,R322	24360622	CF, 6.2k ohm, 1/8w
R177	24360100	CF, 10 ohm, 1/8w	R323,R481	24983279	MF, 2.7 ohm, 1w
R201,R234 } R303,R312	24360563	CF, 56k ohm, 1/8w	R327	24531100	FR, 10 ohm, 0.5w
R207,R514 } R636	24360153	CF, 15k ohm, 1/8w	R328	24382100	OMF, 10 ohm, 1w
R221	24360152	CF, 1500 ohm, 1/8w	R330	24360204	CF, 200k ohm, 1/8w
R212	24360162	CF, 1600 ohm, 1/8w	R352	24061769	VR, 50k ohm, 0.3w
R213	24360821	CF, 820 ohm, 1/8w	R402,R507 } R692	24360183	CF, 18k ohm, 1/8w
R222,R226 } R511	24360123	CF, 12k ohm, 1/8w	R405	24360363	CF, 36k ohm, 1/8w
R227,R331 } R403,R404	24360362	CF, 3600 ohm, 1/8w	R406	24378154	CF, 150k ohm, 1/8w
R691	24360162	CF, 1.6k ohm, 1/8w	R407	24381391	OMF, 390 ohm, 1/2w
R210			R408,R482	24382223	OMF, 22k ohm, 1w
			R409	24384103	OMF, 10k ohm, 3w
			R410	24000947	OMF, 15k ohm, 1/2w
			R411	24360430	CF, 43 ohm, 1/8w
			R415	24946272	CC, 2700 ohm, 1/2w
			R416	24384242	OMF, 2.4k ohm, 3w
			R428	24946220	CC, 22 ohm, 1/2w
			R444	24982109	MF, 1 ohm, 1/2w
			R451	24061783	VR, 10k ohm, 0.3w
			R452	24061782	VR, 2k ohm, 0.3w
			R474	24327363	MF, 36k ohm, 1/4w
			R475	24383471	OMF, 470 ohm, 2w
			R477,R501 } R503,R505	24360471	CF, 470 ohm, 1/8w

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Schematic Location	Part No.	Description
R478	24360470	CF, 47 ohm, 1/8w
R479	24360111	CF, 110 ohm, 1/8w
R510	24360562	CF, 5600, 1/8w
R512	24360183	CF, 18k ohm, 1/8w
R606	24360623	CF, 62k ohm, 1/8w
R609	24360391	CF, 390 ohm, 1/8w
R613	24382222	OMF, 2200 ohm, 1w
R614	24382152	OMF, 1500 ohm, 1w
R615	24382363	OMF, 36k ohm, 1w
R621	24382910	OMF, 91 ohm, 1w
R622	24531561	FR, 560 ohm, 1/2w
R624	24360202	CF, 2k ohm, 1/8w
R625	24360151	CF, 150 ohm, 1/8w
R640	24941222	CC, 2.2k ohm, 1/4w
R801	24381432	OMF, 4.3k ohm, 1/2w
R802	24381392	OMF, 3.9k ohm, 1/2w
R804	24381470	OMF, 47 ohm, 1/2w
R805	24382163	OMF, 16k ohm, 1w
R806	24381473	OMF, 47k ohm, 1/2w
△ R807, R808	24003992	OMF, 18k ohm, 1/2w
△ R809	24378222	CF, 2.2k ohm, 1/8w
R830	24383330	OMF, 33 ohm, 2w
△ R851	24061787	VR, 500 ohm, 0.3w
COILS AND TRANSFORMERS		
L102	23262880	Coil, TRF1446
L103, L171	23262861	Coil, TRF1448
L110	23283569	Coil, PL-5.6, Peaking
L161, L631	23261976	Coil, TRF9228, Choke
L162	23261986	Coil, TRF9220, Choke
L172	23261996	Coil, TRF9203, Choke
L201	23252992	Coil, TRF2403
L405, L406	23261974	Coil, HC5-035
L407	23284109	Coil, PL-1
L411	23222686	Coil, TLN2040, Choke
L481	23221050	Coil, TLN1015, Horiz. Drive
L501	23283682	Coil, PL-6800, Peaking
L601	23262868	Coil, TRF1048
L602	23252955	Coil, TRF6411
△ T401	23224997	Transformer, TLN1027
△ T461	23226555	Transformer, TFB3055B, Horiz. Output

Schematic Location	Part No.	Description
SEMICONDUCTORS		
IC101	23119825	IC TDA2542, PIF, AFT
IC201	23119823	IC TCA660B, VIDEO, CHROMA
IC301	B0354901	IC, TA7609P FA-2, Sync, Vert, Horiz
IC601	23119824	IC TDA1048, SIF
Q111, Q112	A6317547	NPN Transistor, 2SC1815-Y
Q113, Q114		
Q211, Q212		
Q214, Q231		
Q232, Q472		
Q473, Q602	A6708871	NPN Transistor, 2SC388A-TM
Q603, Q690		
Q161, Q631		
Q213, Q221	A6534045	PNP Transistor, 2SA1015-Y
Q471		
Q303, Q802	A6324922	NPN Transistor, 2SC2229-0
Q306	A6319550	NPN Transistor, 2SC2073
Q307	A6532320	PNP Transistor, 2SA940
Q402	A6319403	NPN Transistor, 2SC2068 (FA-1)
Q611, Q612	A6325020	NPN Transistor, 2SC2230-G
	or A6325010	NPN Transistor, 2SC2230-Y
Q802	23114887	NPN Transistor, 2SC2229-Y
D111, D221	A7246711	Diode, 1S1555 (TV)
D222, D223		
D231, D232		
D233, D234		
D301, D303		
D304, D309	A7286500	Zener Diode, 1S2114A
D310, D312		
D401, D501		
D613, D805		
D224		
D241, D502	A7246602	Diode, 1S1553 (TV)
D503, D611		
D242	A7285900	Zener Diode, 1S211A
D302, D406	A7978855	Diode, S5295J
D305, D306	A7568475	Diode, TVR-2D
D307	A7568719	Diode, 1S1887
D471	A7572200	Diode, 1S1942
D481	A7568521	Diode, 1S1885
D482	A7568300	Diode, 1S1835
D631, D632	A7288601	Diode, 1S2186FA-1
D633, D634		
D635		
△ D806	A7286120	Zener Diode, 02Z6.2w, FA-1

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Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
MISCELLANEOUS			RA13	24380133	CF, 13k ohm, 1/8w
P520	23164788	Plug 8P	RA14	24360204	CF, 200k ohm, 1/8w
P650	23163164	Module Socket, 13P	RA15,RA79	24380393	CF, 39k ohm, 1/8w
IC101A,IC201A } IC301A,IC601A }	23116947	IC Socket, 16P	RA16	24380224	CF, 220k ohm, 1/8w
S401	23146999	Relay, TSB4001	RA17	24360680	CF, 68 ohm, 1/8w
W201	23250971	Delay Line, TRF2037	RA18	24360101	CF, 100 ohm, 1/8w
Z101	A5610910	PSF, F1028B	RA19	24380123	CF, 12k ohm, 1/8w
Z601	A5613020	SSF, F1328	RA20	24360132	CF, 1.3k ohm, 1/8w
			RA21	24380362	CF, 3.6k ohm, 1/8w
			RA24	24381221	OMF, 220 ohm, 1/2w
			RA26	24917102	CF, 1k ohm, 1/8w
			RA30, RA34	24380363	CF, 36k ohm, 1/8w
			RA31	24360154	CF, 150k ohm, 1/8w
			RA32,RA33	24360183	CF, 18k ohm, 1/8w
			RA35	24380154	CF, 150k ohm, 1/8w
			RA36	24360123	CF, 12k ohm, 1/8w
			RA40,RA41	24380433	CF, 43k ohm, 1/8w
			RA42,RA43	24380102	CF, 1k ohm, 1/8w
			RA45	24380113	CF, 11k ohm, 1/8w
			RA46	24380163	CF, 16k ohm, 1/8w
			RA47,RA49	24380273	CF, 27k ohm, 1/8w
			RA48	24380432	CF, 4.3k ohm, 1/8w
			RA50	24360512	CF, 5.1k ohm, 1/8w
			RA51	24060763	VR, 100k ohm, 1/10w
			RA52,RA89	24380223	CF, 22k ohm, 1/8w
			RA53,RA70 } RA71 }	24380183	CF, 18k ohm, 1/8w
			RA72,RA73	24380473	CF, 47k ohm, 1/8w
			RA74,RA75 } RA84,RA86 } RA87,RA88 }	24380104	CF, 100k ohm, 1/8w
			RA78,RA80	24380333	CF, 33k ohm, 1/8w
			RA81	24380683	CF, 68k ohm, 1/8w
			RA82	24380303	CF, 30k ohm, 1/8w
			RA85	24360104	CF, 100k ohm, 1/8w
			RA90	24941475	CC, 4700k ohm, 1/4w
			RA98	24380752	CF, 7.5k ohm, 1/8w
			RA99	24360273	CF, 27k ohm, 1/8w
			RE01	24381363	OMF, 36k ohm, 1/2w
			RE02	24383123	OMF, 12k ohm, 2w
			RE03	24381471	OMF, 470 ohm, 1/2w
			RE20	24383103	OMF, 10k ohm, 2w
			RE21	24965152	OMF, 1500 ohm, 3w
			RE22	24383392	OMF, 3.9k ohm, 2w
			RE23	24982109	MF, 1 ohm, 1/2w

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Schematic Location	Part No.	Description
COILS AND TRANSFORMERS		
LA01	23283220	Coil, PL-22, Peaking
SEMICONDUCTORS		
ICA01	B0410045	LSI, TC9002CP, Digital Control
ICA02	B0428410	IC, TMM841P, Memory
ICA03	B0324721	IC TA7315BP Band Switch
ICE01	B0355810	IC, TA7619AP, Memory Control
QA04,QA05	A6317547	NPN Transistor, 2SC1815-Y
QA07,QA08		
QA09,QA43		
QA70,QA71		
QA74,QA75		
QA76,QA77		
QA78		
QA06	A678970A	NPN Transistor, 2SC1569
QA40,QA41	A6708371	NPN Transistor, 2SC383TM
QA42	A6534045	PNP Transistor, 2SA1015-Y
QA73	B0470662	Integrated Circuit, TC4066BP
QE10	A671656A	NPN Transistor, 2SC495-Y
QE11	A6532320	PNP Transistor, 2SA940
DA09,DA10	A7246711	Diode, 1S1555 (TV)
DA11,DA12		
DA13,DA14		
DA15,DA17		
DA18,DA70		
DA71,DA72		
DA73,DA76		
DA77,DA78	A7286120	Zener Diode, 02Z6.2W, FA-1
DE10,DE12		
DA75		
DE07,DE08	A7568300	Diode, 1S1835
DE09		
DE11	A7110653	Zener Diode, 05Z24U
	or A7110652	Zener Diode, 05Z24L
DE20	23115878	Zener Diode, μ PC574JC
MISCELLANEOUS		
P505	23164783	Plug 3P
P508	23164786	Plug 6P
ICA01A	23116843	IC, Socket, 42P
ICA02A,ICA73A	23116948	IC Socket, 14P
ICE01A	23116947	IC Socket, 16P
ZA01,ZA20	24000944	Resistor Block, 100 ohm, 1/8w
ZA03,ZA21	24094578	Capacitor Block, 0.01 μ F, +80%, -20%, 50v

Schematic Location	Part No.	Description
SA20	23145890	Push Switch
SA21	23145889	Push Switch
AFT SWITCH BOARD		
UA04	23139311	AFT Switch Board Assembly, PW2539
CAPACITORS		
CA47	24212561	CD, 560pF, \pm 10%, 50v
CA48	24692222	PF, 2200pF, \pm 5%, 50v
CA49	24636010	EL, 1 μ F, 50v
RESISTORS		
RA91	24380362	CF, 3.6k ohm, 1/8w
RA92	24380103	CF, 10k ohm, 1/8w
RA93	24380102	CF, 1k ohm, 1/8w
RA94	24380101	CF, 100 ohm, 1/8w
RA95,RA96	24380223	CF, 22k ohm, 1/8w
RA97	24380473	CF, 47k ohm, 1/8w
SEMICONDUCTORS		
QA79,QA81	A6317547	NPN Transistor, 2SC1815-Y
QA80	A6534045	PNP Transistor, 2SA1015-Y
MISCELLANEOUS		
P515	23164783	Plug 3P

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Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
COMPONENTS NOT MOUNTED ON P.W. BOARDS					
CAPACITORS					
C191,C192 }	24636010	EL, 1 μ F, 50v	Z411A,Z411B	23192985	Insulator Cap
C194 }			Z411C	23192932	Insulator Cap
C193	24867104	PF, 0.1 μ F, \pm 5%, 50v	UA02	23145882	Key Board 8 position
C195	24636479	EL, 4.7 μ F, 50v	ACCESSORY		
⚠ C463	24212222	CD, 2200pF, \pm 10%, 50v	Y101	23991967	Owner's Handbook
⚠ C464	24442681	CD, 680pF, \pm 10%, 2kv	Y105	23152002	Earphone
RESISTORS			PICTURE TUBE AND TUNERS		
R191,R262	24360103	CF, 10k ohm, 1/8w	⚠ V901	A5391739	Picture Tube 370HZB22 (VY)
R192	24360222	CF, 2200 ohm, 1/8w	H001	23121957	UHF Tuner UP-711
R193	24360272	CF, 2700 ohm, 1/8w	H002	23121853	VHF Tuner CF825
R253	24060170	VR, 10k ohm, 1/5w			
R254	24060757	VR, 10k ohm, 1/5w			
R261	24360752	CF, 7500 ohm, 1/8w			
R351	24058991	VR, 200k ohm, 1/5w			
R555	24058997	VR, 2k ohm, 1/5w			
R651	24055981	VR, 10k ohm, 1/2w (included in S801)			
R661	24946470	CC, 47 ohm, \pm 10%, 1/2w			
R810,R811	24007958	Cement, 200 ohm, 15W/6.8 ohm, 5w			
COILS AND TRANSFORMERS					
⚠ L462	23227915	Deflection Yoke TDY3145A			
	or 23227914	Deflection Yoke, TDY3145B			
L901	23200933	Degaussing Coil, TSB2086			
T661	23216968	Transformer, TSP1039, Speaker			
⚠ T802	23213935	Transformer, TPW1176, Power			
SEMICONDUCTORS					
⚠ Q404	A6847905	NPN Transistor, 2SD869			
Q801	A6846004	NPN Transistor, 2SD777 (FA-3)			
MISCELLANEOUS					
P001	23142756	Aerial Terminal Board, AT-773T			
P661	23163061	Earphone Jack			
P801	23176267	Power Cord			
P802	23116944	Socket, Main Voltage Adjust			
P802A	23164961	Plug, Main Voltage Adjust			
S501	24060757	VR, 10k ohm, 1/5w (included in R256)			
S801	24055981	Power Switch (included in R651)			
V901M	23102989	Purity Magnet, MAG1006			
W661	23151990A	Speaker, SPK1026			
⚠ Z411	23115694	Focus Pack, TPA6014			

1. Voltages read with VTVM from point shown to chassis ground, line voltage 230/115 volts, colour bar signal.
2. Voltages reading may vary $\pm 20\%$.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits subject to change without notice.

1. Resistance is shown in ohm, $k=1,000$, $M=1,000,000$.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH , and the values less than 1 in H.

Table 1













Watt	Mark
16 W	
18 W	
14 W	
12 W	
1 W	
2 W	
3 W	
5 W	
10 W	
15 W	
20 W	
25 W	

Table 2

**U01 PW2376-1
SELECTOR BOARD**

(SOUND MUTE)

QA03 TA73158P
TUNER CONTROL

NC B_y VL V_H G V_s B_u B₆ NC

9 0V 8 0.1V 7 0V 6 0V 5 0V 4 0.6V 3 15.7V 2 16.5V 1 0V

RA33 18K RA32 18K CA30 0.01 CA31 0.01 CA32 0.01

QE11 -7.9V -3.7V 25A940 -7V REGU. DE11 05Z24U or L CE22 22μ (35V) CE04 47μ (160V) CE06 47μ (160V) CE02 0.01 RE21 1.5K RE22 3.9K RA35 150K

QA40 2SC383 TM AFC PULSE AMP. 0.04V

QA41 2SC383 TM VTU PULSE AMP.

QA42 2SA1015-Y L.P.F.-1 QA43 2SC1815-Y L.P.F.-2

QA73 TC4066BP

QA75 2SC1815-Y QA78 2SC1815-Y

QA77 2SC1815-Y QA76 2SC1815-Y

QA79 2SC1815-Y

QA80 2SC1815-Y

QA81 2SC1815-Y

QA82 2SC1815-Y

QA83 2SC1815-Y

QA84 2SC1815-Y

QA85 2SC1815-Y

QA86 2SC1815-Y

QA87 2SC1815-Y

QA88 2SC1815-Y

QA89 2SC1815-Y

QA90 2SC1815-Y

QA91 2SC1815-Y

QA92 2SC1815-Y

QA93 2SC1815-Y

QA94 2SC1815-Y

QA95 2SC1815-Y

QA96 2SC1815-Y

QA97 2SC1815-Y

QA98 2SC1815-Y

QA99 2SC1815-Y

QA100 2SC1815-Y

QA101 2SC1815-Y

QA102 2SC1815-Y

QA103 2SC1815-Y

QA104 2SC1815-Y

QA105 2SC1815-Y

QA106 2SC1815-Y

QA107 2SC1815-Y

QA108 2SC1815-Y

QA109 2SC1815-Y

QA110 2SC1815-Y

QA111 2SC1815-Y

QA112 2SC1815-Y

QA113 2SC1815-Y

QA114 2SC1815-Y

QA115 2SC1815-Y

QA116 2SC1815-Y

QA117 2SC1815-Y

QA118 2SC1815-Y

QA119 2SC1815-Y

QA120 2SC1815-Y

QA121 2SC1815-Y

QA122 2SC1815-Y

QA123 2SC1815-Y

QA124 2SC1815-Y

QA125 2SC1815-Y

QA126 2SC1815-Y

QA127 2SC1815-Y

QA128 2SC1815-Y

QA129 2SC1815-Y

QA130 2SC1815-Y

QA131 2SC1815-Y

QA132 2SC1815-Y

QA133 2SC1815-Y

QA134 2SC1815-Y

QA135 2SC1815-Y

QA136 2SC1815-Y

QA137 2SC1815-Y

QA138 2SC1815-Y

QA139 2SC1815-Y

QA140 2SC1815-Y

QA141 2SC1815-Y

QA142 2SC1815-Y

QA143 2SC1815-Y

QA144 2SC1815-Y

QA145 2SC1815-Y

QA146 2SC1815-Y

QA147 2SC1815-Y

QA148 2SC1815-Y

QA149 2SC1815-Y

QA150 2SC1815-Y

QA151 2SC1815-Y

QA152 2SC1815-Y

QA153 2SC1815-Y

QA154 2SC1815-Y

QA155 2SC1815-Y

QA156 2SC1815-Y

QA157 2SC1815-Y

QA158 2SC1815-Y

QA159 2SC1815-Y

QA160 2SC1815-Y

QA161 2SC1815-Y

QA162 2SC1815-Y

QA163 2SC1815-Y

QA164 2SC1815-Y

QA165 2SC1815-Y

QA166 2SC1815-Y

QA167 2SC1815-Y

QA168 2SC1815-Y

QA169 2SC1815-Y

QA170 2SC1815-Y

QA171 2SC1815-Y

QA172 2SC1815-Y

QA173 2SC1815-Y

QA174 2SC1815-Y

QA175 2SC1815-Y

QA176 2SC1815-Y

QA177 2SC1815-Y

QA178 2SC1815-Y

QA179 2SC1815-Y

QA180 2SC1815-Y

QA181 2SC1815-Y

QA182 2SC1815-Y

QA183 2SC1815-Y

QA184 2SC1815-Y

QA185 2SC1815-Y

QA186 2SC1815-Y

QA187 2SC1815-Y

QA188 2SC1815-Y

QA189 2SC1815-Y

QA190 2SC1815-Y

QA191 2SC1815-Y

QA192 2SC1815-Y

QA193 2SC1815-Y

QA194 2SC1815-Y

QA195 2SC1815-Y

QA196 2SC1815-Y

QA197 2SC1815-Y

QA198 2SC1815-Y

QA199 2SC1815-Y

QA200 2SC1815-Y

QA201 2SC1815-Y

QA202 2SC1815-Y

QA203 2SC1815-Y

QA204 2SC1815-Y

QA205 2SC1815-Y

QA206 2SC1815-Y

QA207 2SC1815-Y

QA208 2SC1815-Y

QA209 2SC1815-Y

QA210 2SC1815-Y

QA211 2SC1815-Y

QA212 2SC1815-Y

QA213 2SC1815-Y

QA214 2SC1815-Y

QA215 2SC1815-Y

QA216 2SC1815-Y

QA217 2SC1815-Y

QA218 2SC1815-Y

QA219 2SC1815-Y

QA220 2SC1815-Y

QA221 2SC1815-Y

QA222 2SC1815-Y

QA223 2SC1815-Y

QA224 2SC1815-Y

QA225 2SC1815-Y

QA226 2SC1815-Y

QA227 2SC1815-Y

QA228 2SC1815-Y

QA229 2SC1815-Y

QA230 2SC1815-Y

QA231 2SC1815-Y

QA232 2SC1815-Y

QA233 2SC1815-Y

QA234 2SC1815-Y

QA235 2SC1815-Y

QA236 2SC1815-Y

QA237 2SC1815-Y

QA238 2SC1815-Y

QA239 2SC1815-Y

QA240 2SC1815-Y

QA241 2SC1815-Y

QA242 2SC1815-Y

QA243 2SC1815-Y

QA244 2SC1815-Y

QA245 2SC1815-Y

QA246 2SC1815-Y

QA247 2SC1815-Y

QA248 2SC1815-Y

QA249 2SC1815-Y

QA250 2SC1815-Y

QA251 2SC1815-Y

QA252 2SC1815-Y

QA253 2SC1815-Y

QA254 2SC1815-Y

QA255 2SC1815-Y

QA256 2SC1815-Y

QA257 2SC1815-Y

QA258 2SC1815-Y

QA259 2SC1815-Y

QA260 2SC1815-Y

QA261 2SC1815-Y

QA262 2SC1815-Y

QA263 2SC1815-Y

QA264 2SC1815-Y

QA265 2SC1815-Y

QA266 2SC1815-Y

PRESSION
UE OF RESISTOR, CAPACITOR and INDUCTOR

Resistance is shown in ohm, k=1,000, M=1,000,000.
Unless other wise noted in schematic, all capacitor values less than 1 are
expressed in mfd and the values more than 1 in pF.
Unless otherwise noted in schematic, all inductor values more than 1 are
expressed in μ H, and the values less than 1 in H.

RESISTOR

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	

Table 1

Watt	Mark
1/16 W	
1/8 W	
1/4 W	
1/2 W	
1 W	
2 W	
3 W	
5 W	
10 W	
15 W	
20 W	
25 W	

Table 2

CAPACITOR

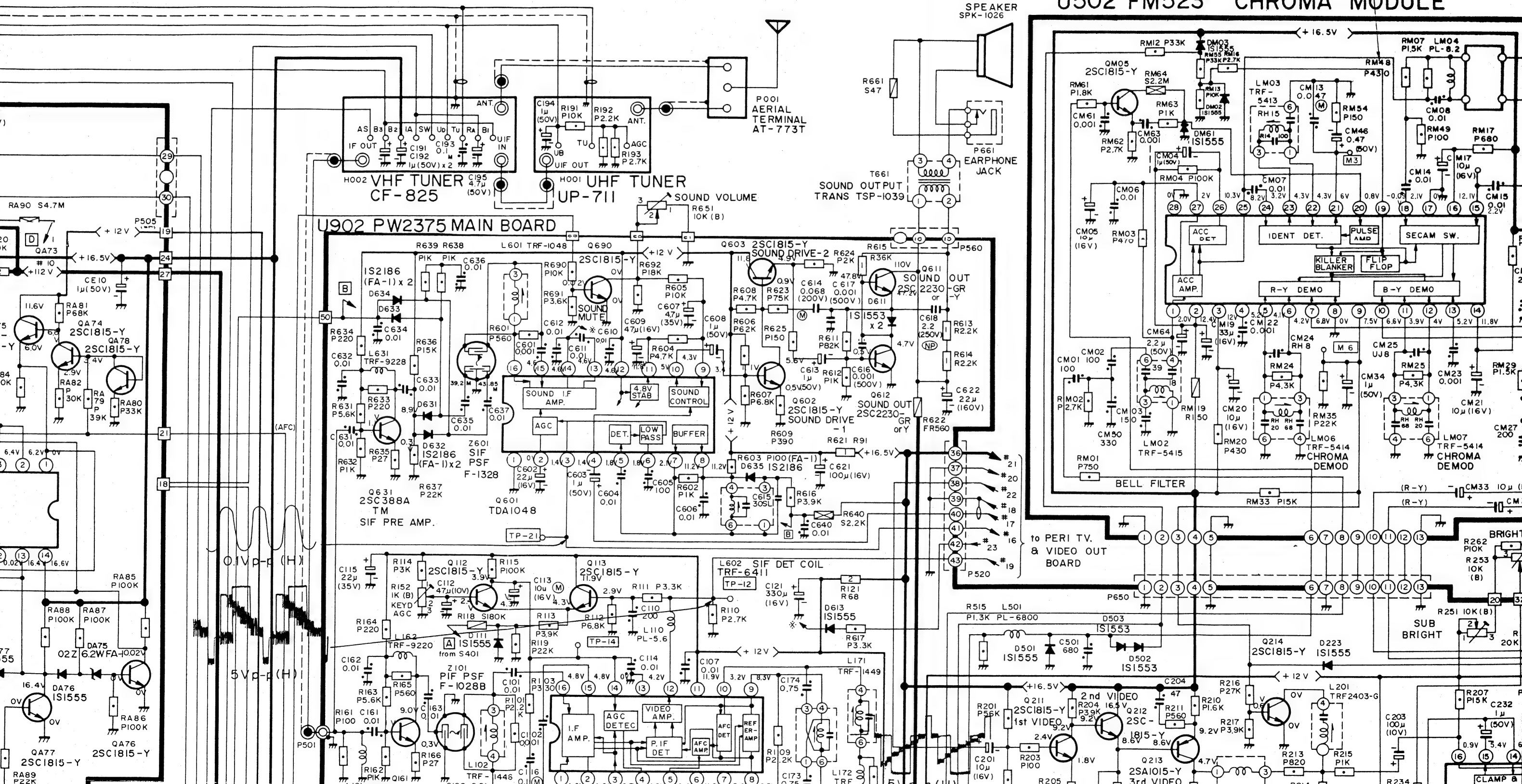
Volt	Mark
6.3V	
10V	
16V	
25V	
35V	
50V	
160-350V	
350-630V	
2.5KV	
Chemical	
Chemical Non Polar	

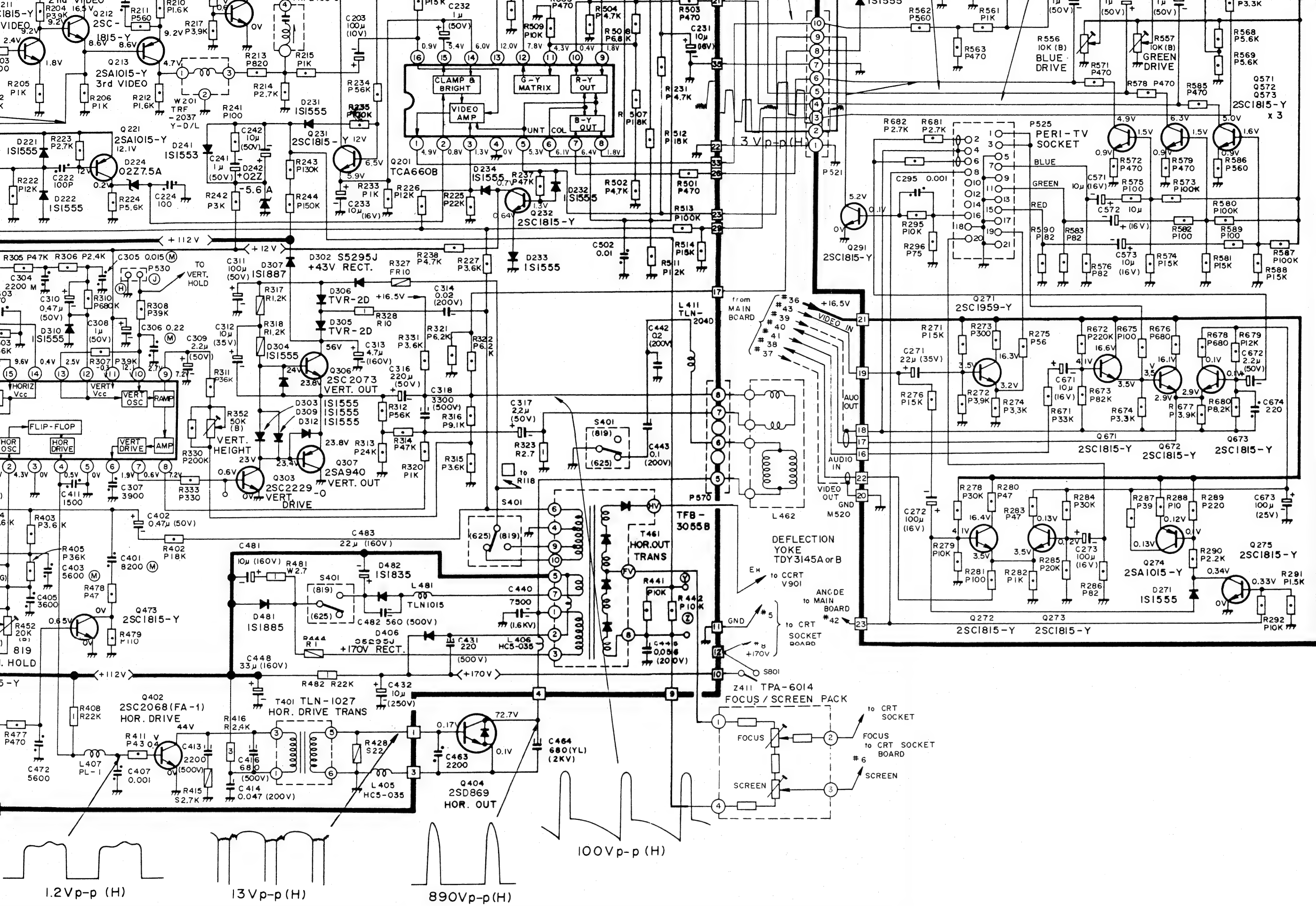
Table 3



1.8Vp-p(H)

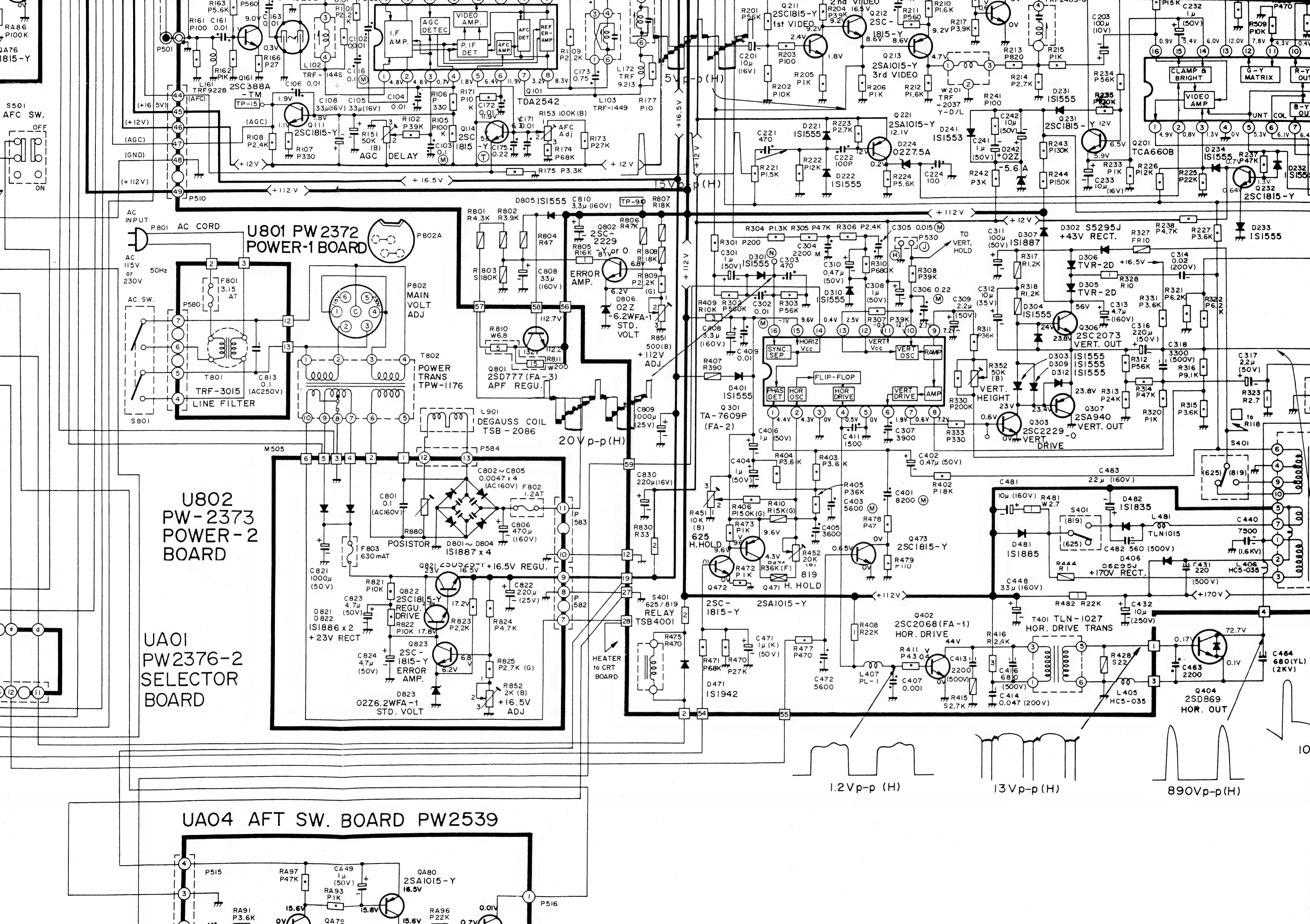
U502 FM523 CHROMA MODULE

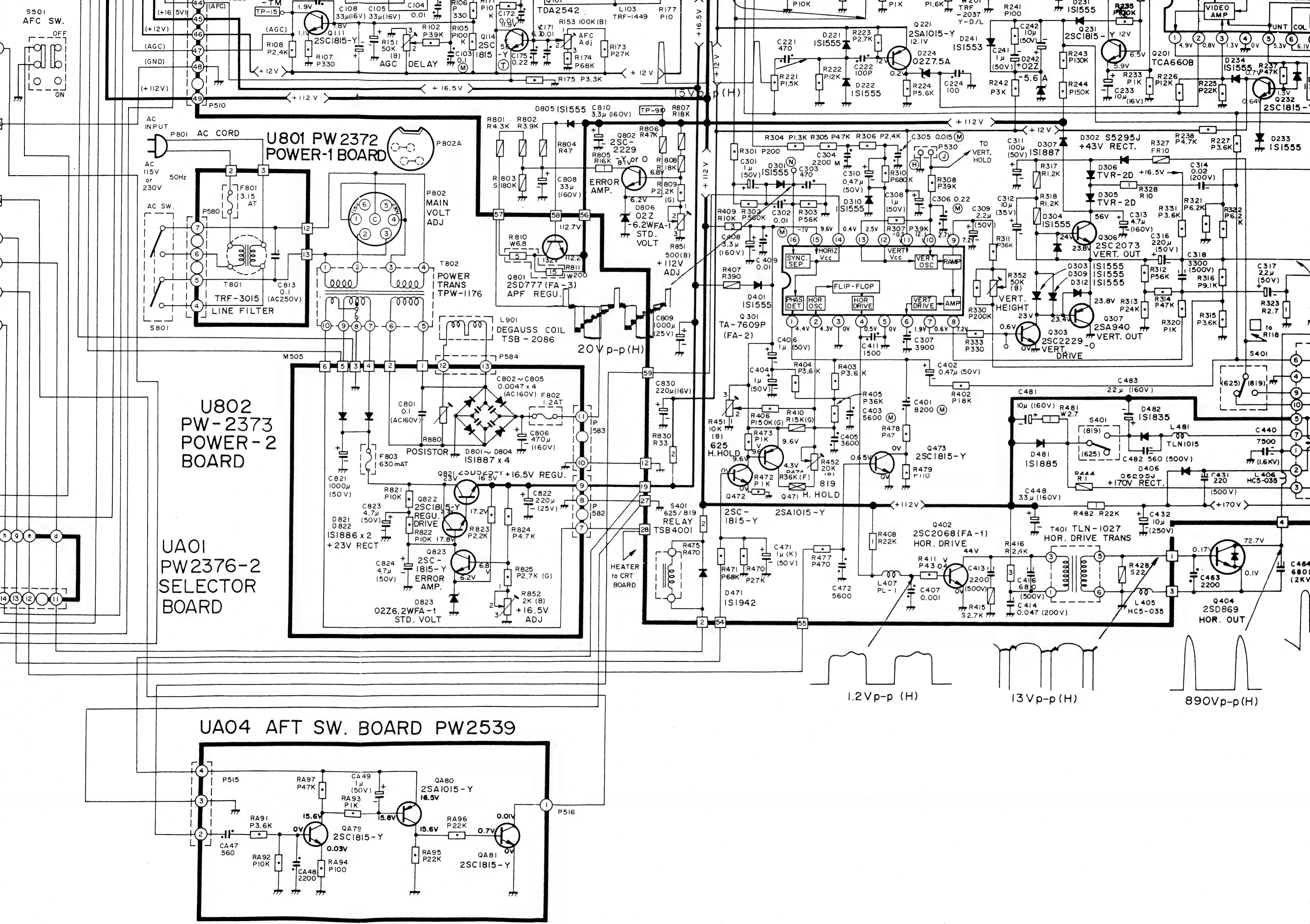




PERI SOCKET
IN/OUT SIGNAL

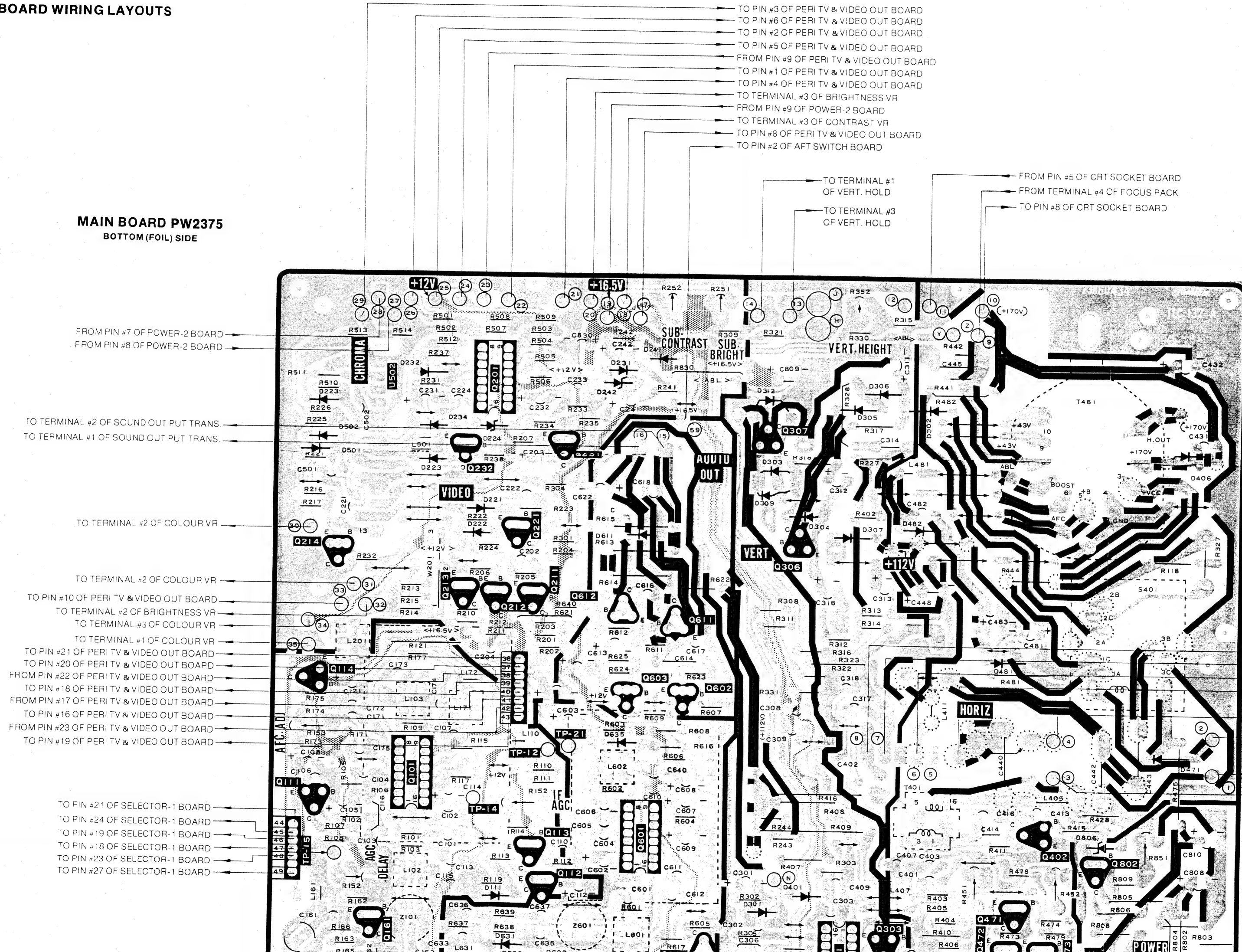
PIN	SIGNAL	SPEC
1	AUDIO OUT	100mVrms ±3dB
2	AUDIO IN	100mVrms ±3dB
3	AUDIO OUT	100mVrms ±3dB
4	AUDIO EARTH	—
5	BLUE EARTH	—
6	AUDIO IN	100mVrms ±3dB
7	BLUE IN	1Vp ±3dB
8	PERI/TV	TV 0-1V PERI 10-12V
9	GREEN EARTH	—
10	NC	—
11	GREEN IN	1Vp ±3dB
12	NC	—
13	RED EARTH	—
14	NC	—
15	RED IN	1Vp ±3dB
16	RAPID BLANKING	0-0~0.4V 1-1~3.0V
17	VIDEO EARTH	—
18	RAPID B EARTH	—
19	VIDEO OUT	1Vp-p ±3dB
20	VIDEO IN	1Vp-p ±3dB
21	SHIELD EARTH	—





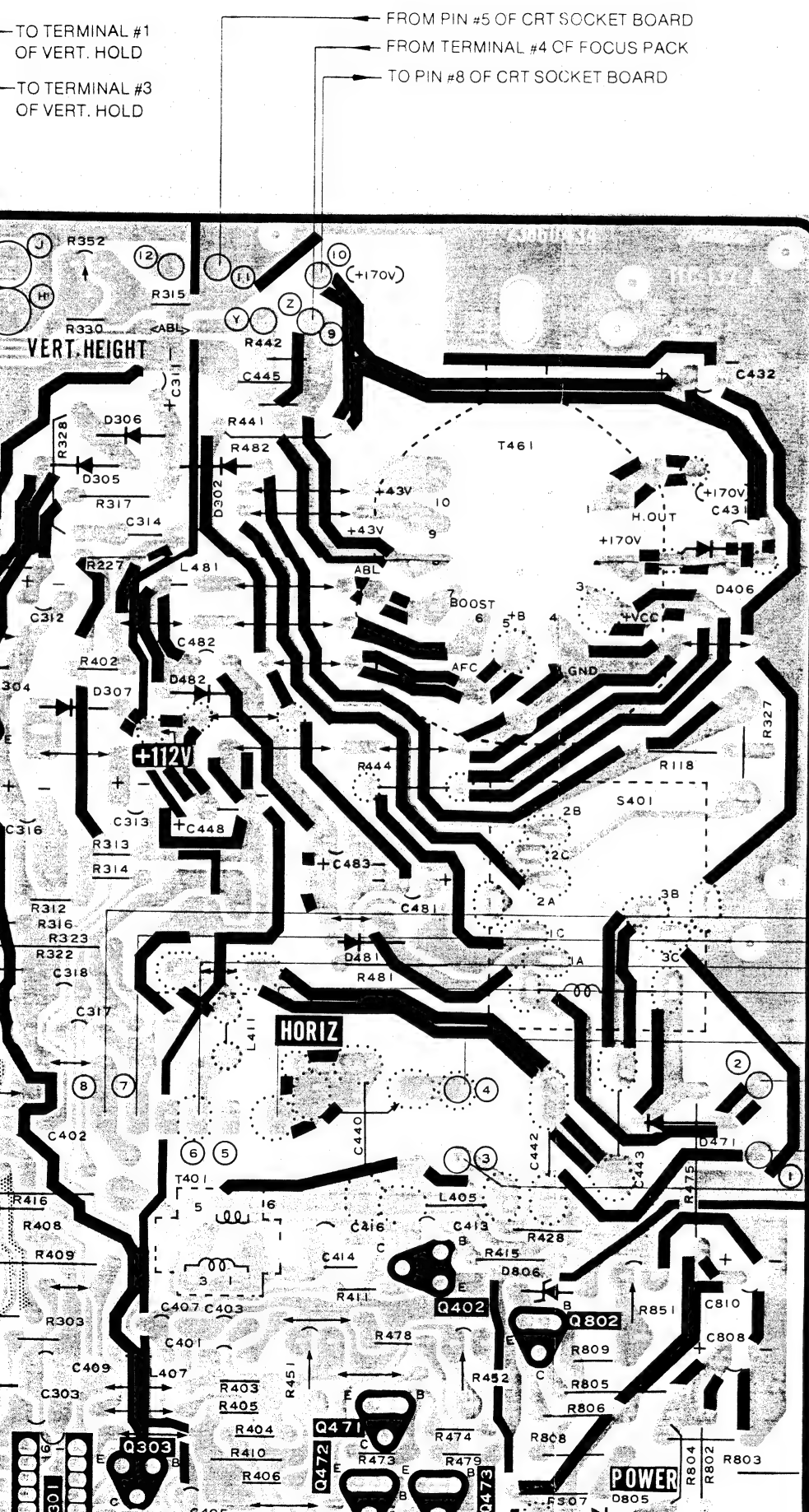
P.C. BOARD WIRING LAYOUTS

MAIN BOARD PW2375 BOTTOM (FOIL) SIDE



—TO TERMINAL #1
OF VERT. HOLD

—TO TERMINAL #3
OF VERT. HOLD



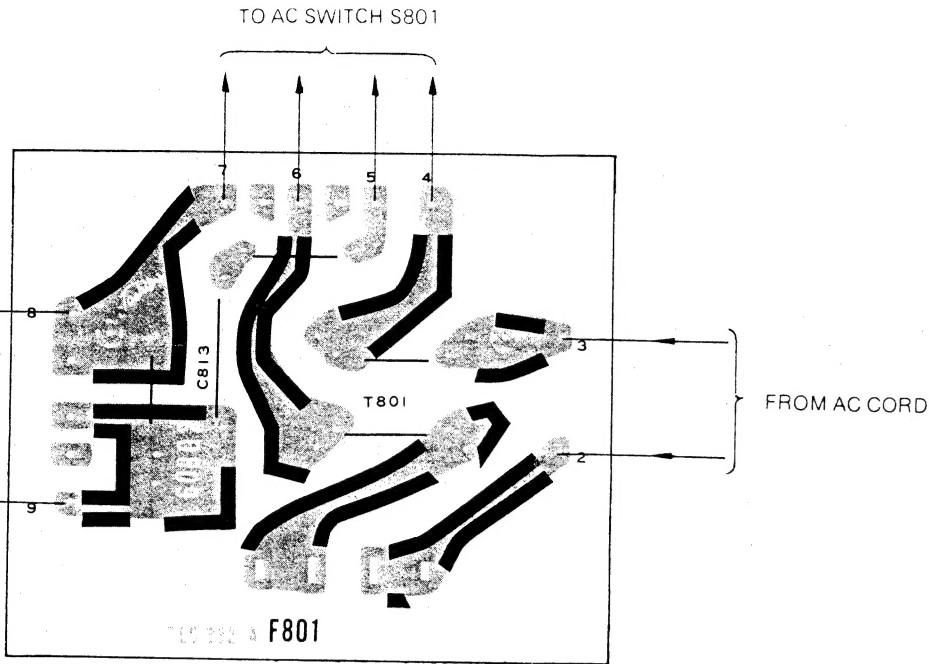
The diagram shows the internal wiring of the F801 tube. The pins are numbered 1 through 9. The connections are as follows:

- Pin 1:** Connected to the AC CORD.
- Pin 2:** Connected to the AC CORD.
- Pin 3:** Connected to the AC CORD.
- Pin 4:** Connected to the AC SWITCH S801.
- Pin 5:** Connected to the AC SWITCH S801.
- Pin 6:** Connected to the AC SWITCH S801.
- Pin 7:** Connected to the AC SWITCH S801.
- Pin 8:** Connected to the MAIN VOLT ADJ P802.
- Pin 9:** Connected to the MAIN VOLT ADJ P802.

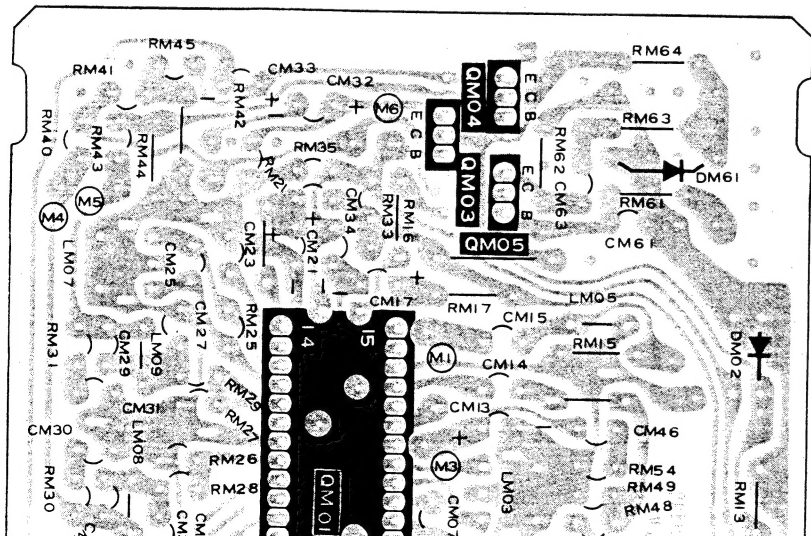
The diagram also shows the internal wiring of the F801 tube, including the AC switch S801 and the main voltage adjuster P802.

FROM PIN #41 OF MAIN BOARD
FROM PIN #39 OF MAIN BOARD
TO PIN #40 OF MAIN BOARD

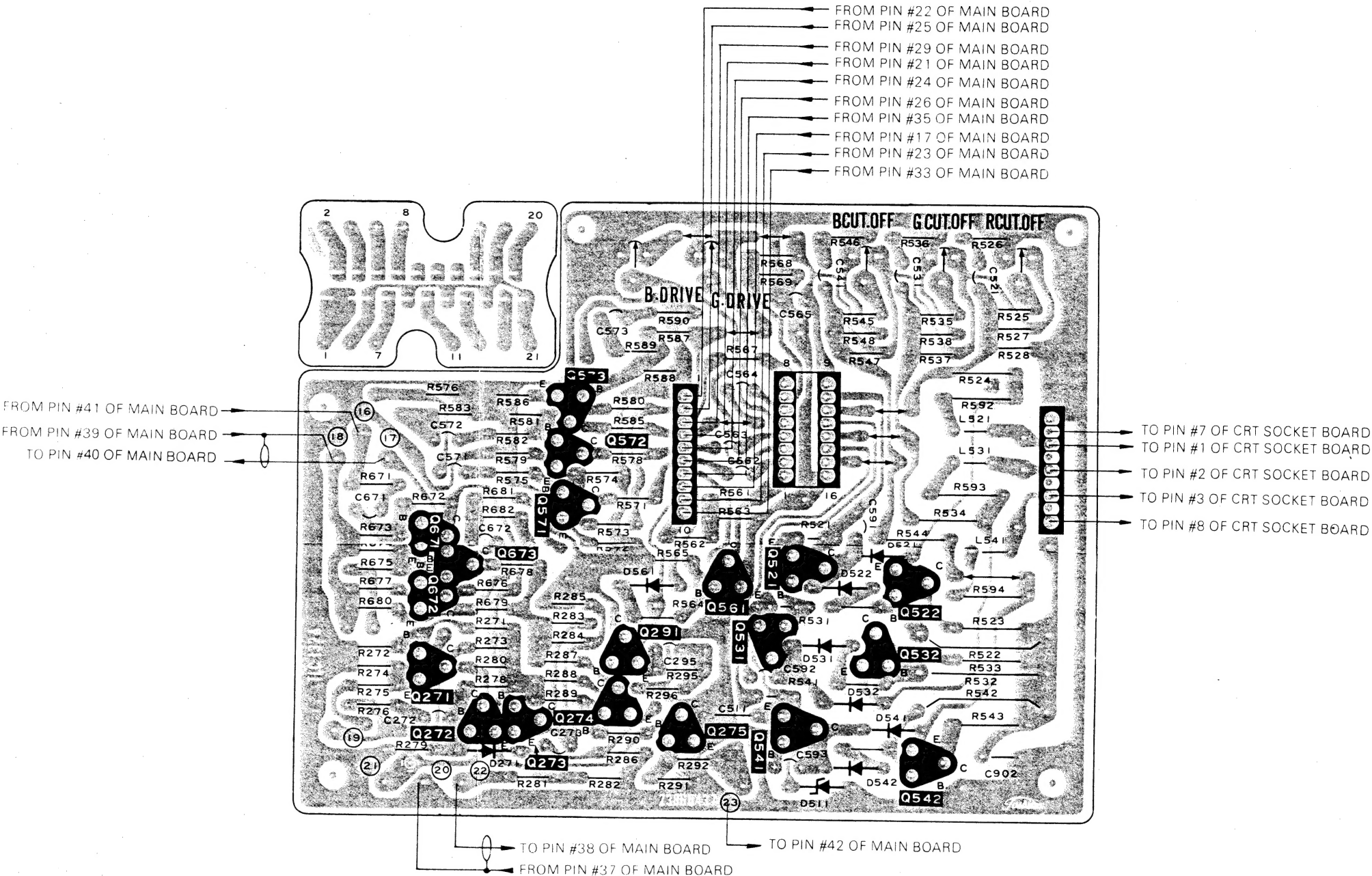
POWER-1 BOARD PW2372
BOTTOM (FOIL) SIDE



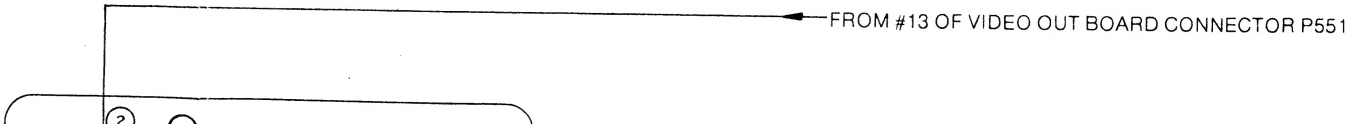
CHROMA MODULE FM523
BOTTOM (FOIL) SIDE

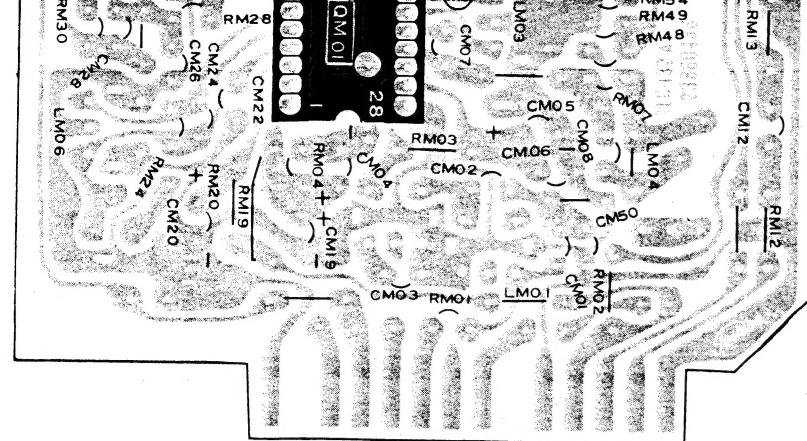


PERI TV 8 VIDEO OUT BOARD PW2377
BOTTOM (FOIL) SIDE

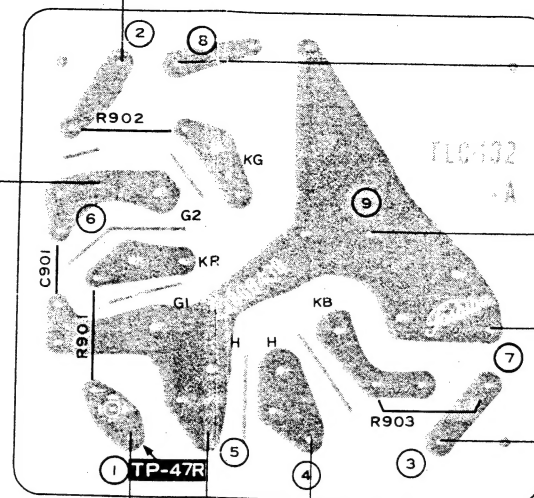


CRT SOCKET BOARD PW2374
BOTTOM (FOIL) SIDE





FROM #3 OF FOCUS/
SCREEN PACK



FROM #15 OF VIDEO OUT BOARD CONNECTOR P551

FROM CRT GROUNDING WIRE

FROM #11 OF VIDEO OUT BOARD CONNECTOR P551

FROM #14 OF VIDEO OUT BOARD CONNECTOR P551

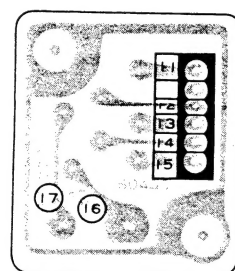
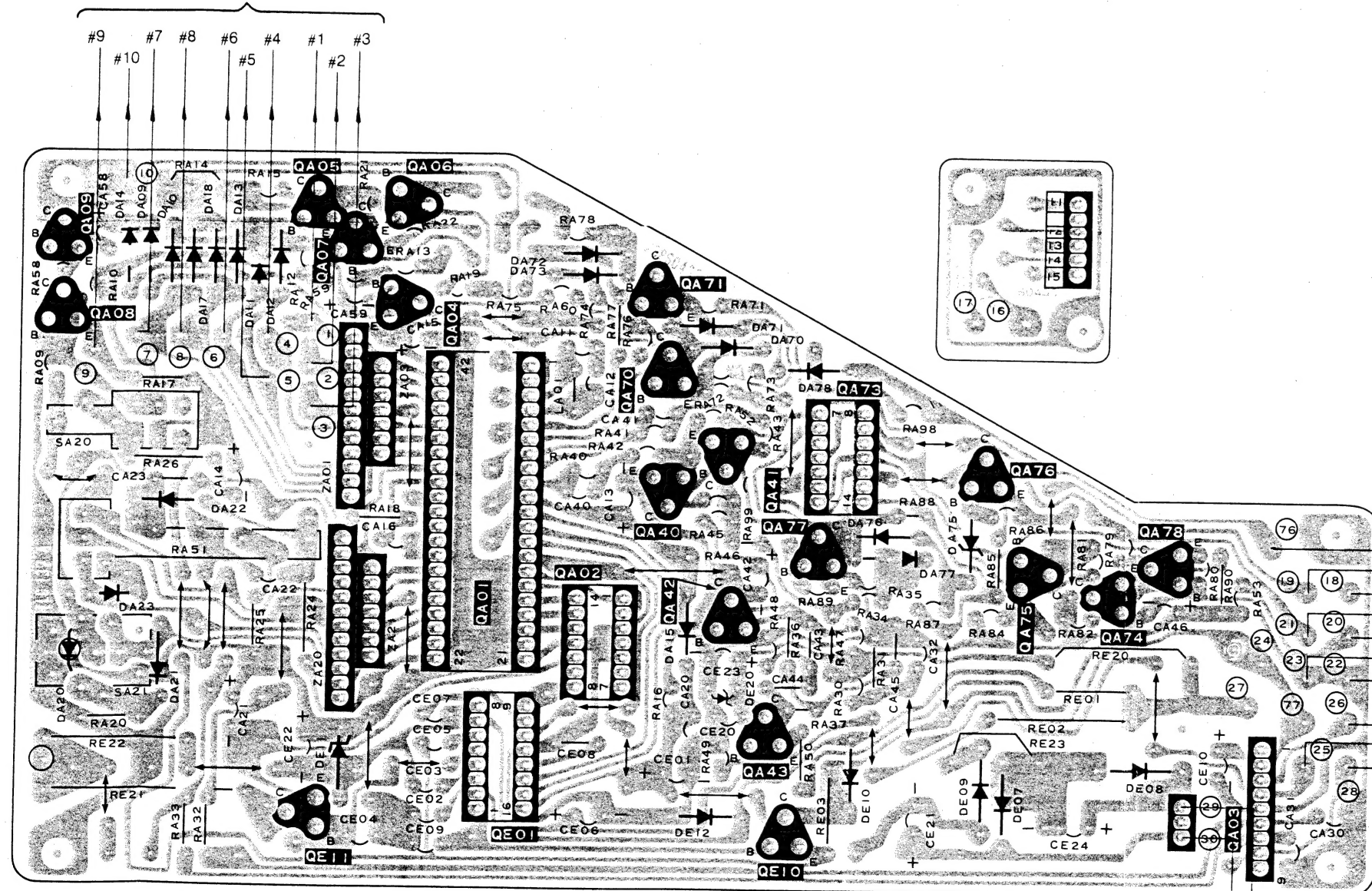
HEATER FROM #28 OF MAIN BOARD

GND FROM #11 OF MAIN BOARD

FROM #12 OF VIDEO OUT BOARD CONNECTOR P551

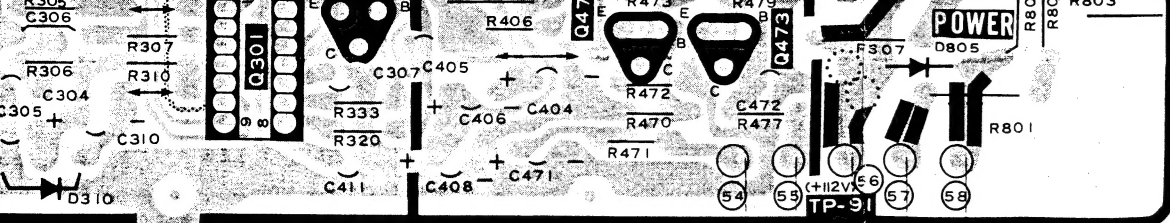
SELECTOR BOARD PW2376 BOTTOM (FOIL) SIDE

TO PINS OF KEY BOARD



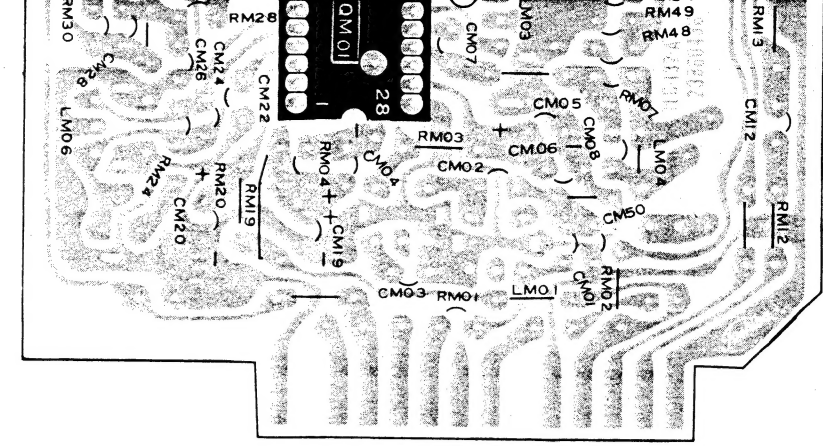
FROM PIN #1 OF AFT SWITCH BOARD
FROM PIN #46 OF MAIN BOARD
FROM PIN #47 OF MAIN BOARD
FROM PIN #44 OF MAIN BOARD
TO TERMINAL TU OF UHF TUNER
FROM PIN #48 OF MAIN BOARD
TO TUNER BRACKET
TO TERMINAL UB OF VHF TUNER AND TERMINAL UB OF UHF TUNER
TO TERMINAL SW OF VHF TUNER
TO TERMINAL B3 OF VHF TUNER

FROM PIN #5 OF POWER-2 BOARD
FROM PIN #3 OF POWER-2 BOARD



FROM PIN #15 OF SELECTOR-2 BOARD
 TO TERMINAL #3 OF SOUND VR
 TO TERMINAL #1 OF SOUND VR
 FROM PIN #14 OF SELECTOR-2 BOARD

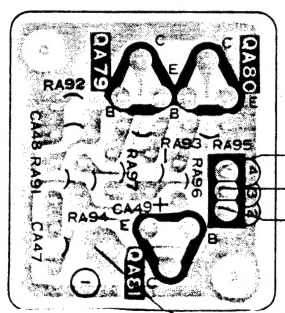
TO BASE OF Q801
 FROM PIN #11 OF POWER-2 BOARD
 FROM EMITTER OF Q801
 FROM PIN #12 OF SELECTOR-2 BOARD
 FROM PIN #13 OF SELECTOR-2 BOARD



FROM #3 OF F
 SCREEN PACI

AFT SWITCH BOARD PW2539

BOTTOM (FOIL) SIDE



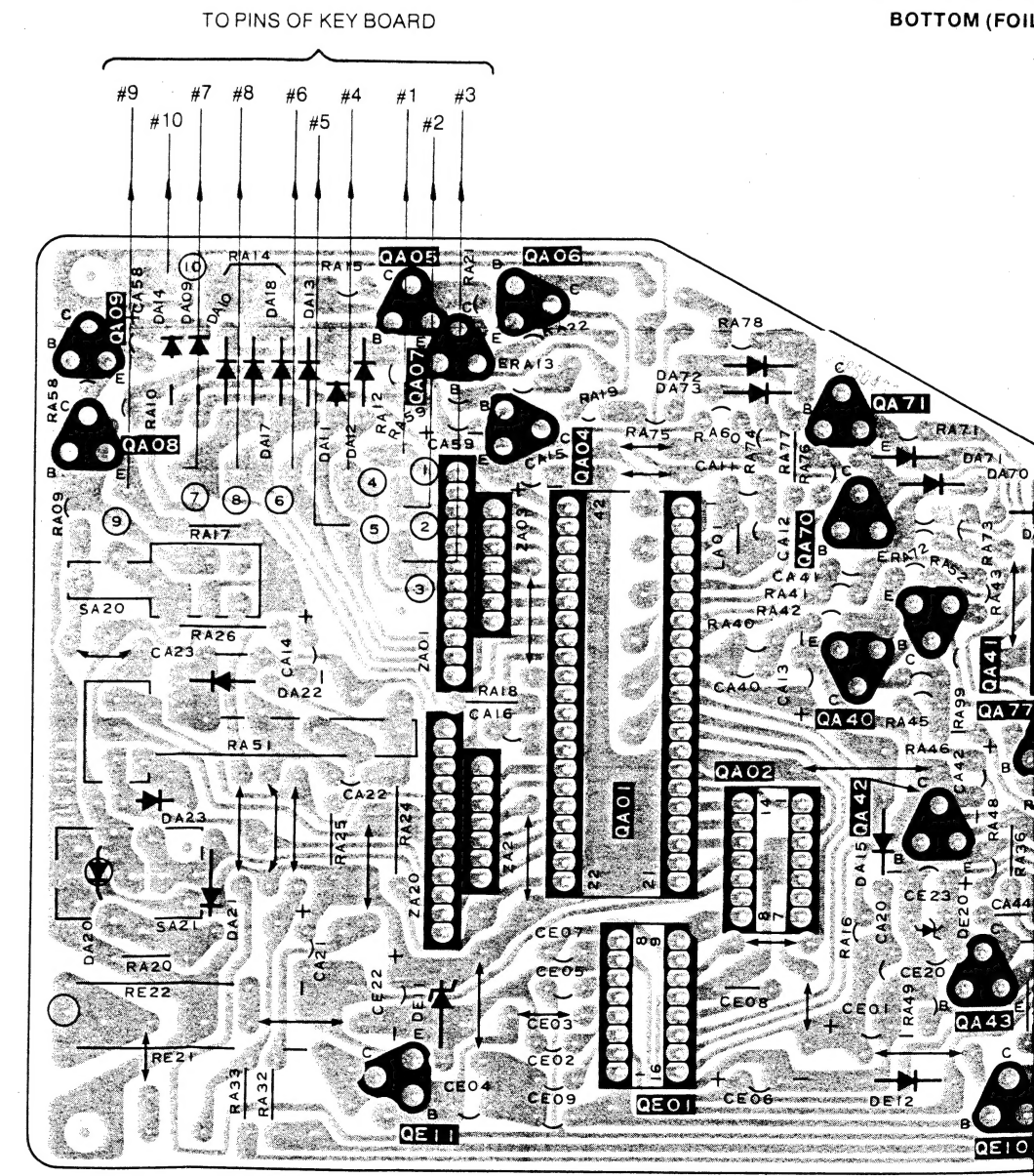
FROM PIN #19 OF MAIN BOARD
 FROM PIN #27 OF MAIN BOARD
 FROM PIN #59 OF MAIN BOARD

TO PIN #76 OF SELECTOR BOARD

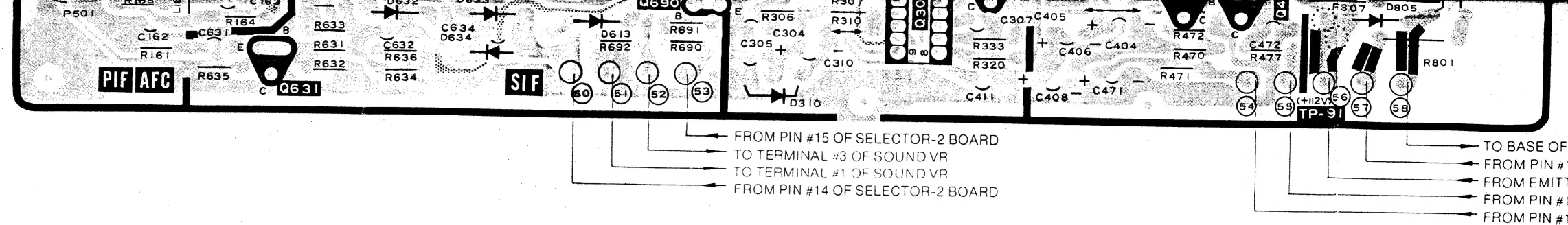
IN #19 OF MAIN BOARD
 IN #27 OF MAIN BOARD
 IN #28 OF MAIN BOARD
 M TERMINAL #10 OF POWER TRANS.
 M TERMINAL #9 OF POWER TRANS.
 M TERMINAL #7 OF POWER TRANS.

SELECTOR BOARD

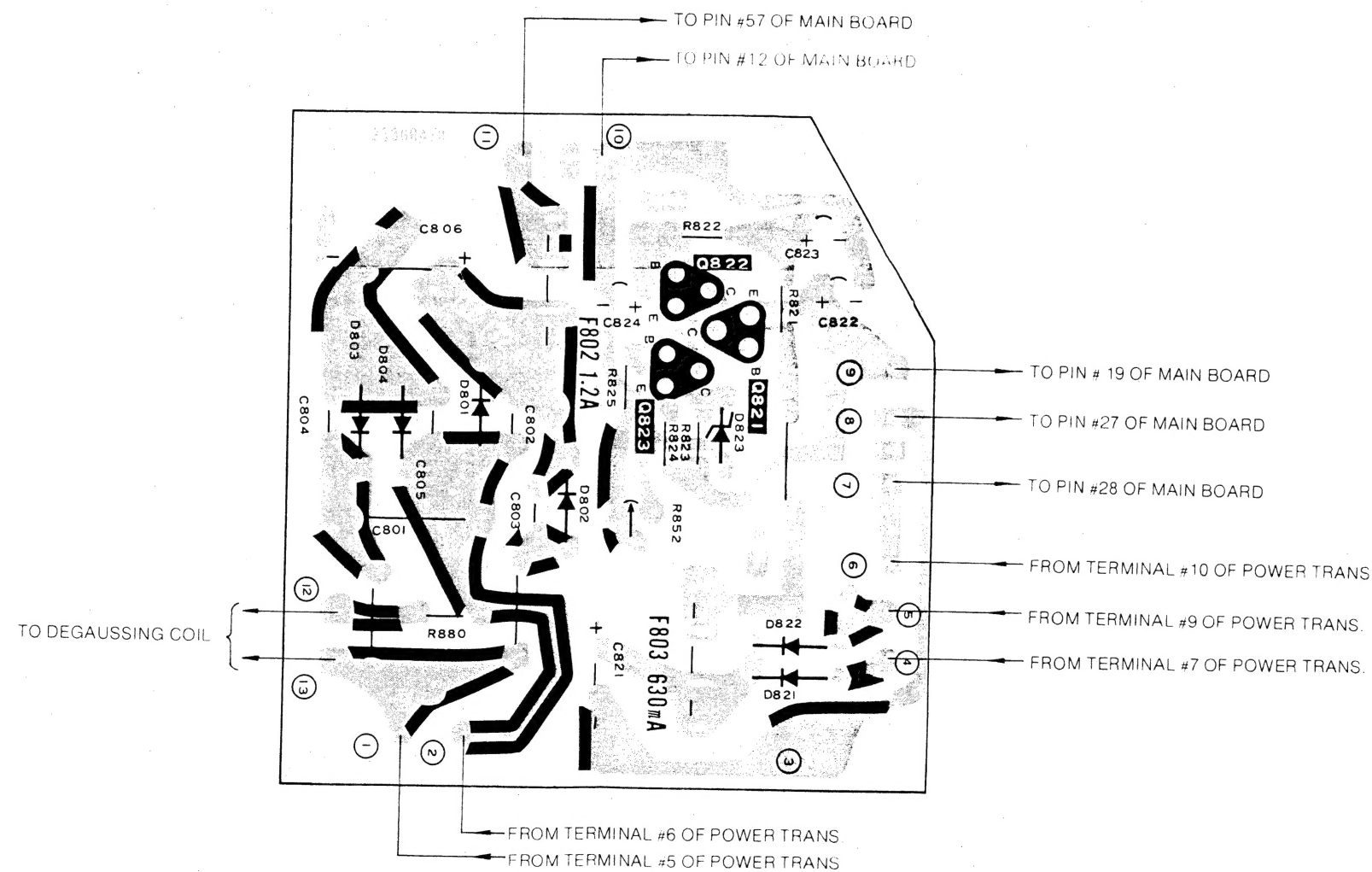
BOTTOM (FOIL) SIDE



TO PINS OF KEY BOARD



POWER-2 BOARD PW2373
BOTTOM (FOIL) SIDE



AFT SWITCH BOARD P
BOTTOM (FOIL) SIDE

